

***Clinical spectrum, diagnostic and
outcome predictors of acute febrile
encephalopathy in a tertiary hospital
in south India***



A dissertation submitted in partial fulfilment of the rules and regulations for
MD General Medicine examination of the Tamil Nadu Dr. M.G.R Medical
University, Chennai, to be held in April 2017

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DECLARATION

This is to declare that this dissertation titled —Clinical spectrum, diagnostic and outcome predictors of acute febrile encephalopathy in a tertiary hospital in south India is my original work done in partial fulfilment of rules and regulations for MD General Medicine examination of the Tamil Nadu Dr.M.G.R Medical University, Chennai to be held in April 2017.

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This is to certify that the dissertation entitled, —Clinical spectrum, diagnostic and outcome predictors of acute febrile encephalopathy in a tertiary hospital in south India

is a bonafide work done by

Dr. Manoj Job S B

towards the partial fulfilment of rules and regulations for MD General Medicine

degree examination of the Tamil Nadu Dr.M.G.R Medical University, to be

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Medicine degree examination of the Tamil Nadu Dr.M.G.R Medical
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INTRODUCTION

Acute febrile encephalopathy is a term commonly used by physicians to describe the clinical syndrome of short duration fever which is either accompanied or followed by altered mental status.(1) This is one of the syndromes frequently encountered by the physicians in the emergency department.(2) The emergency physician is always challenged with the task of identifying the etiology of this syndrome because it has serious implications on the management and the outcome. (2)

Routinely this syndrome of acute febrile encephalopathy is thought to be caused by various infectious etiology(2), however in practice we find that there are several non-infectious etiologies like heat stroke that presents with this syndrome. Understanding the different non-infectious etiology would help in quicker diagnosis and prompt initiation of appropriate management. The different spectrum of infectious causing acute febrile encephalopathy via bacterial, viral, fungal, protozoal also needs to be studied to aid early diagnosis and to initiate appropriate empirical therapy. Delay in initiation of therapy would have serious implications in terms of poor outcome and acute neurological sequelae. Another important aspect to be considered is the geographical and seasonal variations that occur. Different strategies need to be considered in different geographical areas and in different seasons in the same geographical area.(3)

In this study we attempt to look at the different spectrum of etiology of acute febrile encephalopathy including both infectious and non-infectious and their outcome in a tertiary hospital in South India through a period of one year so as to learn the various seasonal variations.

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Text Only Report

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INTRODUCTION

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In this study we attempt to look at the different spectrum of etiology of acute febrile encephalopathy including both infectious and non-infectious and their outcome in a tertiary hospital in South India through a period of one year so as to learn the various seasonal variations.

AIM

- To study the clinical spectrum of patients presenting with acute febrile encephalopathy to a tertiary hospital in South India.

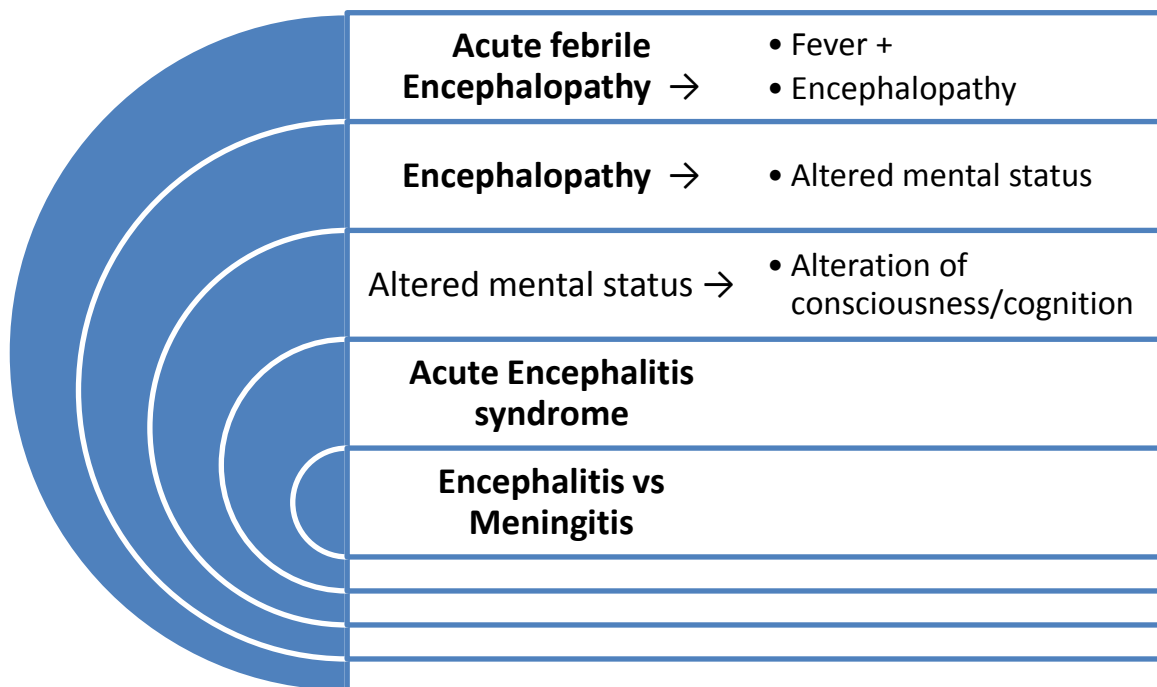
OBJECTIVES

- To study the etiology of patients presenting with acute febrile encephalopathy.
- To study the clinical and laboratory predictors in the diagnosis of etiology (Infectious and non-infectious) of acute febrile encephalopathy
- To assess the outcome (Mortality and functional outcome) of patients with acute febrile encephalopathy using modified Rankin scale.
- To study the predictors of outcome in patients with acute febrile encephalopathy.

REVIEW OF LITERATURE

UNDERSTANDING TERMINOLOGIES

As discussed in the introduction, acute febrile encephalopathy is a common syndromic presentation that physicians encounter in the emergency department. Prior to a detailed discussion of the various aetiologies presenting with this syndrome it is imperative that the various terminologies mentioned in the literature to describe this is well understood.(4)



Acute Febrile Encephalopathy (AFE) = Short duration fever + Encephalopathy

ACUTE FEBRILE ENCEPHALOPATHY

Acute Febrile encephalopathy is a term commonly used by the physicians to describe the clinical syndrome of acute febrile illness which is either accompanied or followed by altered mental status

ENCEPHALOPATHY is a broad term for any diffuse disease of the brain that alters brain structure or function. The hall mark of encephalopathy is **altered mental status**.

Encephalopathy may be caused by bacteria, virus, or prion, metabolic or mitochondrial dysfunction, ischemic or hypoxic ,brain tumour or increased intracranial pressure, long standing exposure to toxic substances like drugs, radiation, solvents, paints, industrial chemicals, and certain metals, trauma, poor nutrition, or lack of oxygen or blood flow to the brain.

In febrile illness, multiple pathogenic mechanisms can contribute to the encephalopathy. Pathological process can directly affect the central nervous system or indirectly affecting the central nervous system through systemic complications such as hypovolemia, hypoglycaemia, hypoxia, anaemia, hepatic failure, renal failure and bleeding. (5)

Clinically it is synonymously used with multiple terminologies including altered sensorium, altered mental status and change in mental status.

It is important to understand normal mental status to identify patients with altered mental status.

MENTAL STATUS is a combination of patient's level of consciousness and cognition.(6)

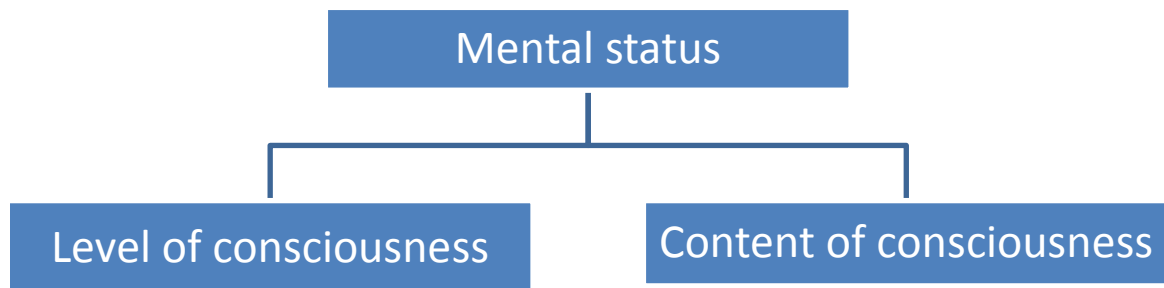


Figure 1 Domains of mental status

Normal mental status is when the patient has normal level of consciousness and the content of consciousness is normal.

Consciousness is the quality or state of being aware especially of something within oneself.

The terms used to describe different level of consciousness are

Normal or Alert
Vigilant or Hyper alert
Drowsy or Lethargic
Stupor
Coma

The Content of consciousness include

Orientation
Attention
Executive function
Language
Memory
Perception

Normal mental status when impaired is termed altered mental status which can be either an altered level of consciousness ranging from being vigilant or hyper alert to being drowsy, stupor or comatose or an impairment in the content of the consciousness or a combination of both.

ALTERED MENTAL STATUS (AMS) is used to describe different states of mental functioning that can vary between mild confusion to coma.(6)

Different synonyms are used in the literature to describe this state such as, not acting right, confusion, altered behaviour, altered sensorium, lethargy, agitation, psychosis, disorientation, inappropriate behaviour, in attention. (7,4)

The understanding of these terminologies will help us in identification of the problem early and also to document it accurately so that further worsening or improvement can be assessed.

MENINGITIS VERSUS ENCEPHALITIS

An acute infection of the central nervous system is a very important problem because recognition of this problem early and rapid institution of therapy usually is lifesaving.

Acute infection of the Central nervous system usually presents with one of these clinical syndromes

1. Bacterial meningitis
2. Viral meningitis or encephalitis
3. Focal infection of brain- brain abscess or subdural empyema.

Meningitis is when infection predominantly involves the arachnoid space. Nuchal rigidity is the pathognomonic sign for identifying meningeal involvement. However the sensitivity and specificity of the same is uncertain and it can be absent or reduced in patients with altered mental status, elderly, young and immunocompromised patients.

The presence or absence of normal brain function is the significant differentiating feature between encephalitis and meningitis. The distinguishing feature between the both is frequently blurred since some patients may have both a parenchymal and meningeal process with clinical features of both. Meningoencephalitis is a common term used to describe this overlap.

The importance of distinguishing between the two syndromes lies in the fact that the aetiology of each syndrome is different.

ENCEPHALITIS

Encephalitis is an acute, diffuse inflammatory process affecting the brain.(8)

The definition of acute encephalitis syndrome was introduced by the world health organisation to improve the surveillance for Japanese encephalitis which is the most common cause of encephalitis in tropical countries. Although this definition includes illnesses caused by both infectious and non-infectious aetiology most often acute encephalitic syndrome is considered to be due to a viral aetiology. With this definition even a basic health worker can identify a case which is defined as

ACUTE ENCEPHALITIS SYNDROME

“Clinically, a case of Acute Encephalitis Syndrome (AES) is defined as a person of any age, at any time of year with the acute onset of fever and at least one of: a) change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk); b) new onset of seizures (excluding simple febrile seizures¹). Other early clinical findings may include an increase in irritability, somnolence or abnormal behaviour greater than that seen with usual febrile illness”

EPIDEMIOLOGY

IMPORTANCE

The true incidence of acute febrile encephalopathy (AFE) is difficult to determine because of the wide variety of aetiologies causing the syndrome. Broadly it can be classified as infectious and non-infectious. It is important to know the incidence, geographical distribution and the seasonal variations, so that it can aid in quicker diagnosis, prompt initiation of treatment, helps in devising preventive strategies and control measures. The incidence of infectious aetiology is particularly difficult to determine because many cases are unreported or the diagnosis may not be considered and specific viral aetiology is difficult to confirm. The non-infectious spectrum of acute febrile encephalopathy is not a notifiable disease and hence less public health awareness is present though it is very important to recognise particularly the heat stroke syndrome as it causes significant mortality and morbidity and the incidence of these are also not known. It is of paramount importance to know the incidence of acute encephalitic syndrome specifically those caused by different viruses since it can cause high morbidity and mortality. It affects peoples of all ages, however incidence is slightly higher in children. Male predominance was also shown in few studies. Some aetiology like herpes has a worldwide distribution while some like arbovirus-Japanese encephalitis are geographically restricted.(9)

Thus understanding epidemiology is very important in the knowledge of acute febrile encephalopathy.

WORLD SCENARIO

The estimated incidence of the acute encephalitis syndrome (AES worldwide is not clearly known. In US the estimated incidence is ~75000 per year for viral meningitis and ~20000 per year for the encephalitis. Worldwide there is no or underreporting of suspected acute encephalitic syndrome, so the actual incidence is expected to be much higher than is known. A list of incidence study on acute febrile encephalopathy (AFE) in the published literature in different regions of the world is shown in the table 1. Analysis from the table revealed that tropical countries had an incidence rate of 1.77(+/-0.32) where western industrialised countries had an incidence rate of 0.51-7.4.

Table 1 Summary of incidence rates of acute febrile encephalopathy/acute encephalitic syndrome published in literature

Study	Publication year	Year of study	Setting	Incidence rate
Kamei et al. (10)	2000	1989-1991	Japan	1.77
Heinrich et al.(11)	2003	1993-1998	Thailand	6.34
Akiba.(12)	1997	1997	Nepal	145-185
Khetsuriani et al (13)	2007	1998-1997	USA	0.51-0.53
Mailles et al (14)	2007	2000-2002	France	1.9
Ponka et al (15)	1982	1980	Finland	3.5
Klemola et al (16) Kaeaeriaeinen et al (17)	1965	1945-1965	Finland	2-3
Trevejo(18)	2004	1990-1999	USA	4.3
Pedersen (19)	1956	1952-1954	Jutland	6.75-9.25
Bhegi et al (20)	1984	1950-1981	USA	7.4
Nicolosi(21)	1986	1950-1981	USA	7.4
Nagabhusana Rao	2003	1993-2000	India	1

Few large nationwide studies done in different countries are as follows.

A nationwide survey done in Japan, to find the aetiology of febrile encephalopathy reported 983 cases of encephalopathy with influenza virus as the most common cause followed by rota virus and human herpes virus.(22).The precise incidence of encephalitis is not known. The incidence of encephalitis in England was estimated by linking hospitalisation data with a prospective study and using capture recapture model which estimated the incidence of encephalitis as 5.23 cases/100000/year.(23). A systematic review by Granerod et al on the incidence of encephalitis in non-outbreak situations estimated an annual incidence ranging from 0.07 cases to 12.6 cases per 100000 population.(24)

INDIAN SCENARIO

The data available on the incidence of acute febrile encephalopathy in India is scarce. Most of the data that is available is only from the outbreak investigations, surveillance studies, case series and case reports. Three seventy five (375) million people in India are at risk of developing acute febrile encephalopathy(25). In India, surveillance done as part of the National vector borne disease control programme had reported almost 50% of the AES cases from the states of Uttar Pradesh, West Bengal and Tripura. This may not reflect the prevalence of the disease in these regions, as much as better reporting practices in these states. The surveillance found 11586 AES cases with almost 10% mortality in 2015(26).

The incidence rate in India was estimated as 0.46 as compared to 5.6 in Nepal (25).The distribution of acute febrile encephalopathy is shown in figure 2(25)

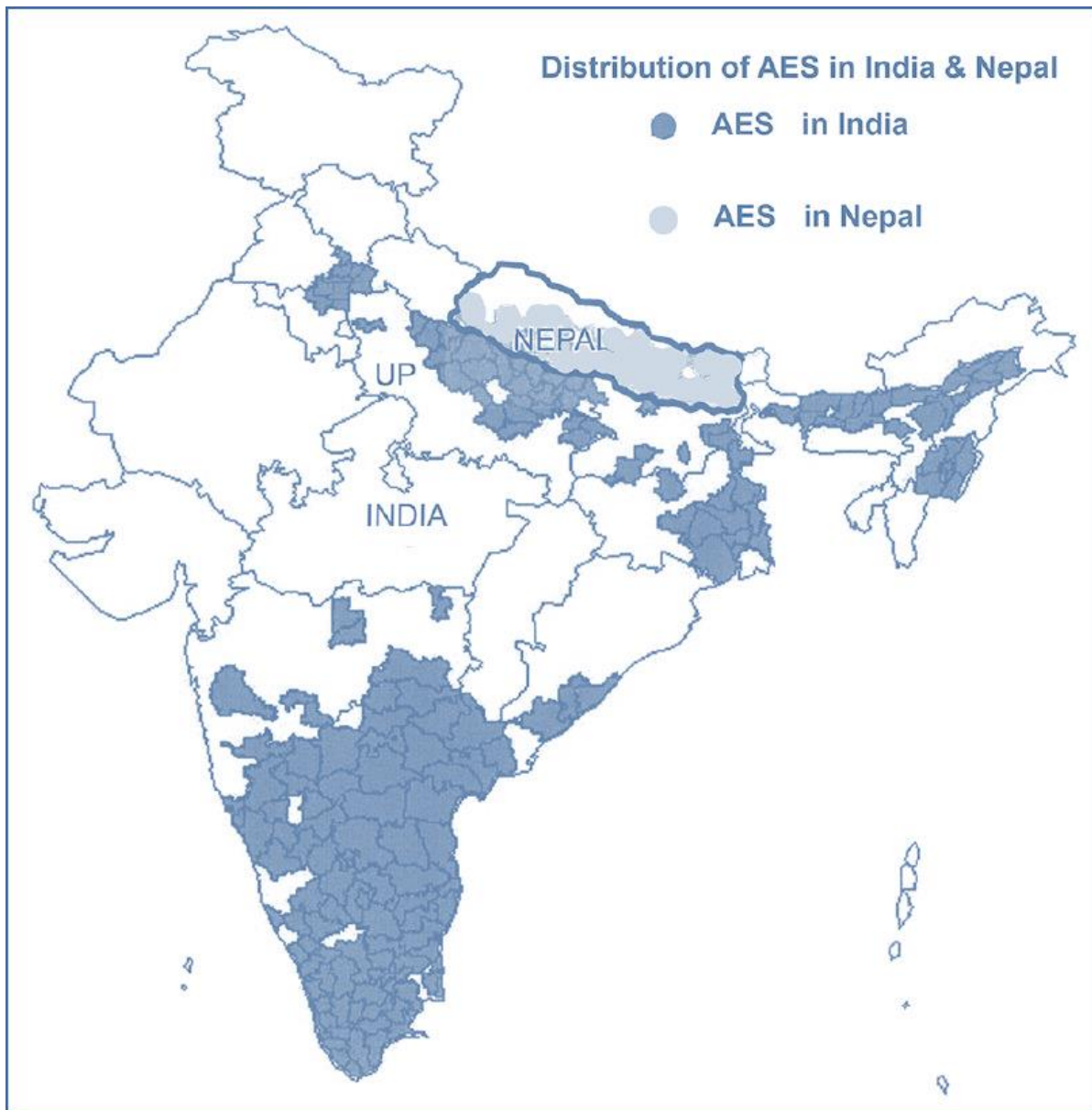


Figure 2 Distribution of Acute Febrile encephalopathy in India

The etiology of Acute Encephalitic Syndrome (AES) is often not identified due to non-availability of complete virus panel in most centres. An etiological agent is identified in 25% of cases of AES. 10 to 15 percent is caused by Japanese encephalitis and the remaining by other viruses such as enterovirus, mumps, rubella, measles, nipah virus, dengue, adenovirus, influenza, chikungunya and many

others.(25). AES in India were often attributed to Japanese encephalitis infection however recently new outbreaks caused by Nipah, Chandipura and enterovirus have been reported.(27–31)Japanese encephalitis is the most common cause of AES in Asia (32) with 10,000 deaths in about 50000 cases. Japanese Encephalitis was first reported by Carey et al from Christian Medical college hospital, Vellore in 1955(33)

ETIOLOGY OF ACUTE FEBRILE ENCEPHALOPATHY

The aetiology of Acute Febrile Encephalopathy is broad including both infectious and non-infectious. Understanding the different aetiologies is important for the physicians in the emergency department as it can help in quicker diagnosis and early initiation of therapy. We will discuss the aetiology under two major heading the infectious and non-infectious.

INFECTIOUS

Most of the literature on acute febrile encephalopathy has discussed mainly on the infectious aetiology(2,34–36). It is the most common cause to present with this neurological syndrome .The various aetiological agents known to cause this are bacterial, viral, tubercular, fungal, and parasitic which is shown in figure 3

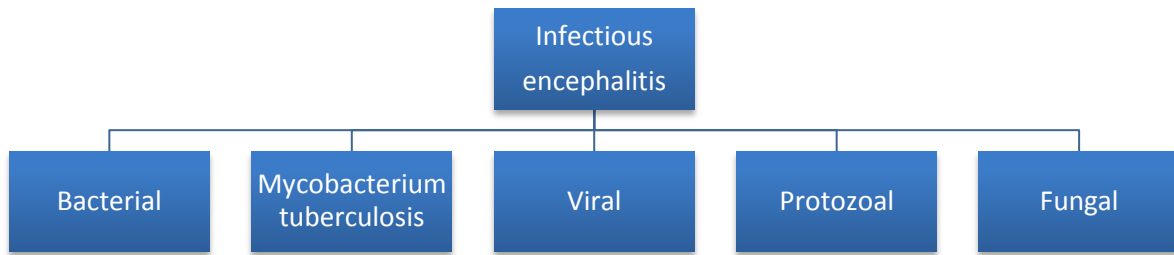


Figure 3 etiological agents of acute infectious encephalopathy

BACTERIAL

ACUTE BACTERIAL MENINGITIS

Acute bacterial meningitis constitutes a large number of patients who present with altered sensorium to the emergency department. It is a life threatening condition, more so in children than in adults. Thus, it is imperative to make a rapid clinical and microbiological diagnosis so that treatment can be initiated at the earliest. In the era before the use of antibiotics, the fatality due to acute bacterial meningitis was very high. However, after the advent of antibiotics, the mortality has drastically come down. However, a large number of patients are left with significant neurological sequelae causing significant morbidity. There have not been many studies which have been carried out in adults describing the epidemiology, risk factors and outcomes.(37)

ETIOLOGY

In adults the most common cause of acute bacterial meningitis is as follows –

1. *Streptococcus pneumoniae* (56%)
2. *Neisseria meningitidis* (20%)
3. Group B *Streptococci* (15%)
4. *Listeria monocytogenes* (6%)
5. *Haemophilus influenzae* (5%) (38)

RISK FACTORS

There have been various risk factors identified in community acquired bacterial meningitis. The most common risks factors identified were a middle ear infection, sinusitis, an immunocompromised state, alcoholism and a co-existing pneumonia. Other risk factors identified were a recent head injury, CSF leak and those who have undergone recent neurosurgical procedures.(37)

PATHOPHYSIOLOGY

The basic pathology behind acute bacterial meningitis is an acute inflammation of the lepto-meninges with an exudate encasing the brain. This exudate tracks along the penetrating vessels and causes phlebitis or arteritis which in turn causes necrosis of surrounding vascular territory. This may sometimes lead to cerebral oedema and acute hydrocephalus. This in turn decreases cerebral perfusion resulting in neuronal injury.(37)

CLINICAL FEATURES

Bacterial meningitis typically presents with the triad of fever, neck stiffness and altered mental status. Most patients present with short duration of high grade fever with associated severe holocranial headache and vomiting. On examination, there is almost always nuchal rigidity and an altered mental status with papilledema. Other findings to be looked for are a petechial rash which is highly specific for meningococcal meningitis. A small proportion of patients can present with seizures or a focal neurological deficit.(39)

INVESTIGATIONS

A lumbar puncture must be done as soon as possible in order to confirm the diagnosis. High opening pressures are always almost present and CSF analysis shows low glucose and elevated protein levels. It also shows a CSF pleocytosis (neutrophil predominant). A smear will occasionally show the organism of interest such as gram negative diplococci.

TREATMENT

Appropriate IV antibiotics must be given as soon as a diagnosis is made. If the results of CSF analysis are delayed and if clinical suspicion is high, empirical IV broad spectrum antibiotics must be started as soon as the lumbar puncture is performed. Early administration of antibiotics has shown to improve outcomes.(37)

OUTCOMES

Overall mortality rates are around 25% for community acquired meningitis. Three factors which were found to have higher association with mortality are age more than 60 years, altered mental state on admission and seizures within 24 hours of admission.(39)

SCRUB TYPHUS MENINGOENCEPHALITIS

INTRODUCTION

Scrub typhus is caused by *Orientiatsutsugamushi* (previously called *Rickettsia tsutsugamushi*) .It usually presents as an undifferentiated febrile illness but a subset of then can present with the neurologic syndrome of acute febrile encephalopathy.

EPIDEMIOLOGY

O. tsutsugamushi is found throughout the Asia Pacific region. Scrub typhus is endemic in India ,Taiwan ,Korea, China, , Japan, Pakistan, Thailand, ,Malaysia, and in the tropical Australia (40)

INCUBATION PERIOD

Infection commonly presents as an acute febrile illness seven to ten days after the bite of an infected larval trombiculid mite (chigger) (41)

CLINICAL MANIFESTATIONS

Overview : Scrub typhus usually starts insidiously with anorexia, headache, and malaise, or sometimes begins abruptly with chills and fever. As the illness evolves, most patients develop the following symptoms:

- Fever usually lasts for long periods in untreated patients (median-14.4 days; range(9-19) (42)
- Generalized headache
- Diffuse myalgias

DIAGNOSIS

As with all rickettsial diseases, no lab test is diagnostically reliable in the early phases of scrub typhus. The disease is usually recognized when clinicians correlate the presence of compatible clinical signs, symptoms, and laboratory features, with epidemiologic clues (eg, recent exposure to environments in which chiggers are known or suspected to be present).

Patients with scrub typhus may develop the following laboratory abnormalities:

- Thrombocytopenia.
- Elevations in liver enzymes, bilirubin, and creatinine.
- Leukocytosis can occur or a normal white blood cell count.

While these laboratory findings are relatively nonspecific, four methods can be used to more definitively confirm the presence of *O. tsutsugamushi* infection.

- Serology,
- Biopsy
- Culture
- Polymerase chain reaction.

SEROLOGY

The indirect fluorescent antibody (IFA) is used in the serologic diagnosis.

Biopsy of the generalized rash or an eschar, reveals the pathological hallmark of scrub typhus, a lymphohistiocytic vasculitis. Damage to endothelial cells occurs early in infection, leading to widespread vascular dysfunction. This endothelial injury causes a loss of vascular integrity, egress of plasma and plasma proteins, and microscopic and macroscopic haemorrhages. Thus, the histologic changes in biopsies of eschars include focal areas of cutaneous necrosis surrounded by a zone of intense vasculitis, with perivascular collections of lymphocytes and macrophages. Thrombosis of small blood vessels can also occur. Demonstration of these typical vasculitic changes can be diagnostic, even when rickettsiae are not demonstrable by fluorescent antibody conjugates.

POLYMERASE CHAIN REACTION — Polymerase chain reaction (PCR) technology done in scrub typhus patients can definitively establish the diagnosis, even in the few patients who lack IgM antibodies very early in the course of infection (43)

TREATMENT

Doxycycline and Azithromycin are comparable in shortening clinical illness and reducing the incidence of relapse of infection.

TUBERCULOSIS OF CENTRAL NERVOUS SYTEM

INTRODUCTION — Tuberculosis (TB) of the Central nervous system (CNS) includes three clinical categories

- Tuberculous meningitis
- Intracranial tuberculoma
- Spinal tuberculous arachnoiditis.

All of them are frequently encountered in the clinical practice where the incidence of tuberculosis is high and post-primary dissemination is commonly seen in children and young adults(44)

PATHOGENESIS

During the hematogenous spread that follows a primary infection or reactivation tuberculosis (TB), scattered tuberculous foci (tubercles) are formed in the meninges and brain. The rupture of sub-ependymal tubercle into the subarachnoid space is the critical event leading to the development of tuberculous meningitis.

CLINICAL MANIFESTATIONS

Typically, patients with CNS tuberculosis present with a subacute febrile illness that progresses through three discernible phases (45)

- The prodromal phase
- The meningitic phase
- The paralytic phase

DIAGNOSIS

The diagnosis of CNS TB is challenging and a high degree of suspicion is critical in order to initiate therapy promptly. Diagnostic tools consist of cerebrospinal fluid examination (including culture and nucleic acid testing) and radiography.

SPINAL FLUID EXAMINATION

The cerebrospinal fluid examination is of critical importance to the early diagnosis of tuberculous meningitis. Typically, the CSF fluid shows elevated protein and lowered glucose concentrations with a mononuclear pleocytosis(46). CSF protein ranges from 100 to 500 mg/dL in most patients. In patients where there is blockage of subarachnoid high levels in the range of 2 to 6 g/dL can be seen. In 80 percent of cases the CSF glucose is less than 45 mg/dL.

RADIOGRAPHY

Cerebral edema, basilar arachnoiditis, infarction, and hydrocephalus are seen in the imaging findings of patients with tuberculous meningitis

TREATMENT

Anti-tuberculous therapy (ATT) should not be delayed for microbiological proof. It should be initiated immediately if the clinical suspicion is high as the clinical

outcome varies on the stage at which therapy is started .More harm results from delaying the therapy , even for a few days, than from inappropriate therapy .

VIRAL MENINGOENCEPHALITIS

As we discussed earlier the different viral infections of the central nervous system result in the clinical syndrome of aseptic meningitis or meningoencephalitis or encephalitis. More than 100 different viruses has been identified as causative agents of the infective aetiology of acute febrile encephalopathy such as herpes simplex, Epstein Barr, varicella zoster, adenovirus, enterovirus, mumps, measles, Japanese encephalitis and many more. The arthropod borne viruses causes epidemic encephalitis which is usually restricted to a geographical area and the frequency varies in different seasons of the same year.(47)

PATHOPHYSIOLOGY

Acute viral encephalitis is disease mainly involving the grey matter with parenchymal and perivascular infiltration of inflammatory cells.(47) Post infectious encephalomyelitis mainly involves the white matter with periventricular inflammation and demyelination.(47)

We shall discuss some of the specific viral etiologies causing the acute febrile encephalopathy.

SPECIFIC ETIOLOGY

HERPES SIMPLEX ENCEPHALITIS

INTRODUCTION

Herpes simplex virus- 1 (HSV-1) causes encephalitis which is frequently the sporadic form and is fatal.

PATHOGENESIS

Routes of infection: HSV infection of the central nervous system (CNS) appears to arise via one of three routes, each accounting for approximately one-third of infections (48)

- Direct CNS invasion via the trigeminal nerve or olfactory tract following an episode of primary HSV-1 of the oropharynx. Primary infection occurs in age group less than 18 years.
- CNS invasion after an episode of recurrent HSV-1 infection, which is believed to represent viral reactivation with subsequent spread
- CNS infection without primary or recurrent HSV-1 infection, which is felt to represent reactivation of latent HSV in situ within the CNS

CLINICAL FEATURES

Symptoms and signs: Focal neurologic findings may occur and are usually acute (<1 week in duration) and include altered mental status and impairment of level of consciousness with focal cranial nerve deficits including aphasia, hemiparesis,

dysphasia, ataxia, or even focal seizures. About 90 percent of patients have one of the above mentioned symptoms with fever (48) Other neurologic symptoms which can occur are fecal and urinary incontinence, aseptic meningitis, localized dermatomal rashes, and even Guillain-Barré syndrome (49)

Laboratory abnormalities: Cerebrospinal fluid examination typically shows a lymphocytic pleocytosis, increased erythrocyte count (84 percent of patients), and elevated protein. Normal cerebrospinal fluid (CSF) can occur early in the disease. When the clinical suspicion is high a repeat testing is undertaken. If the glucose is low, an alternative diagnosis should be considered (50)

Imaging studies: Imaging in HSV encephalitis usually have temporal lobe abnormalities on brain imaging .Temporal lobe abnormalities are unilateral associated with or without mass effect (48)

Electroencephalogram (EEG): Focal electroencephalogram (EEG) findings occur in more than 80 percent of cases, typically showing predominantly delta and theta waves

Polymerase chain reaction: Polymerase chain reaction(PCR) technology is the gold standard for detecting herpes simplex virus DNA in the CSF .The test has a sensitivity of 98 percent and specificity of 94 to 100 percent. Treatment for HSV encephalitis should be initiated awaiting the results of PCR. HSV DNA is detectable using the PCR analysis of the CSF for a minimum of two weeks and even up to one month (51)

TREATMENT

As soon as HSV is suspected in the emergency department empirical therapy with intravenous acyclovir at the dose 10 mg/kg IV every 8 hours should be started.

Aggressive and early antiviral therapy prevents mortality and the limits the neurological sequelae such as cognitive and behavioral impairments.

ADENOVIRUS ENCEPHALITIS

Adenovirus is a common pathogen which affects the paediatric population in the form of respiratory, gastro-intestinal and renal infections. They have also in the recent past been found to cause neurological disorders such as aseptic meningitis, myelitis, subacute focal encephalitis and Reye-like syndrome. The most common presentation of patients with an adenovirus neuro-infection is a reversible encephalopathy.(52)

ETIOLOGY

Type 7 adeno virus has been most commonly associated with encephalitis in children. However, the other types (1,2,3,6 and 12) have been isolated from the CSF of patients with meningo-encephalitis.(53) Type 7 adeno virus has been known to be associated with a meningoencephalitis with a more severe course.(54)

RISK FACTORS

There have been no specific risk factors identified. This entity is almost exclusively limited to children below the age of 10.(53) There has been one case report of a subacute adenovirus encephalitis in a 42 year old with malignant lymphoma on multiple immunosuppressants.(55)

PATHOPHYSIOLOGY

The pathophysiology of this disease is unknown, however, it has been postulated that viral induced host responses mediate the reversible encephalopathy.(54)

CLINICAL FEATURES

Children presented with high grade intermittent fever which lasted for 5-7 days and progressive decline of sensorium. There were no symptoms or signs of raised intracranial pressure and no history of seizures. There is marked absence of nuchal rigidity and patients usually had a normal neurological examination. Most children had concomitant respiratory, conjunctival or gastrointestinal symptoms.(54)

INVESTIGATIONS

Laboratory investigations are usually normal except for a minimal leucopenia. A lumbar puncture also yields normal results. CSF cultures and PCR's are also negative. However, an EEG done shows diffuse background slowing which helps differentiate it from other forms of an aseptic meningitis.

However, in case of an adenovirus meningoencephalitis, there is pleocytosis in the CSF along with presence of the organism in brain specimens.

Adenovirus can be isolated in sputum, conjunctiva and nasopharyngeal swab by neutralization assays.(54)

TREATMENT

Treatment is conservative with no need for the use of antibiotics. There is gradual improvement of signs and symptoms over 1 week with no persistence of neurological deficits.

EPSTEIN BARR VIRAL ENCEPHALITIS

EBV encephalitis is a rare (<1%) and self-limiting cause of encephalitis. It is disease entity which is almost always seen only in the paediatric age group.(56) It has also been reported to manifest as meningoencephalitis, cerebritis, transverse myelitis, neuropsychiatric syndrome and cranial nerve palsies. However, most neurological complications occur 1-3 weeks after the onset of illness.

ETIOLOGY

It is caused by the Epstein Bar virus (EBV) and EBV encephalitis can occur alone or in association with infectious mononucleosis.

PATHOPHYSIOLOGY

The pathophysiology of this disease is still under debate and has been postulated to be due to direct viral invasion or an autoimmune pathology. It has been shown to be a immune mediated process that result in multifocal demyelination of peri-venous white mater.

CLINICAL FEATURES

Patients were of the paediatric age group and presented with fever, seizures, headache, depressed sensorium and bizarre behaviour. On examination, they can have altered consciousness, meningeal signs, bulbar signs, cerebellar signs and cranial nerve palsies. The classical findings of infectious mononucleosis were absent.(57)

INVESTIGATIONS

Detection of virus in both CSF and blood is usually done with the help of PCR. MRI is the imaging of choice and shows peculiar distribution of reversible diffusion. There can also be changes in bilateral basal ganglia which accounts for the behavioural disturbances.(58,59)

TREATMENT

Acyclovir and corticosteroids have been tried in treatment of EBV encephalitis however their effectiveness is unknown.(60)

OUTCOME

Large enough studies have not been carried out to determine long term outcome and prognosis of these patients. However, it is usually associated with recovery in spite of severe disease which may require mechanical ventilation.

DENGUE ENCEPHALITIS

Dengue infection is a common infection worldwide and is a very common cause of febrile illness in the Indian sub-continent. Dengue ranges from dengue fever, dengue hemorrhagic syndrome and dengue shock syndrome. Some patients have also been reported to have neurological involvement in the form of an encephalopathy. Other manifestations such as transverse myelitis, Guillain- Barre syndrome, acute disseminated encephalomyelitis and myositis. However, these entities have been poorly understood. The incidence of dengue encephalopathy ranges between 0.5% to 6.2%.(61)

ETIOLOGY

Dengue is a single stranded RNA virus of the flavivirus genus with 4 serotypes 1 to 4. The serotypes are heterogeneous and do not confer autoimmunity. A secondary infection with a different serotype is almost always more severe. Few studies have shown that serotypes 2 and 3 are most likely to cause neurological complications. Secondary infection is also shown to have a higher incidence of neurological complications.(62)

RISK FACTORS

The lower socio-economic strata of society are more susceptible to dengue in view of poor living conditions.

PATHOPHYSIOLOGY

Once the virus enters the blood stream, it infects and replicates within the macrophages and monocytes. Host immune response plays an important role in the pathophysiology of this disease. Encephalopathy in dengue is very poorly understood. It is unknown if the virus is neurotropic or is mediated by direct infection of the nervous system.

CLINICAL FEATURES

A patient with dengue encephalitis usually presents with fever, decreased consciousness, headache and seizure. On examination, patients can have a focal neurological deficit, cranial nerve palsies and quadriparesis. Neurological symptoms usually started after 5-7 days of the onset of fever.

INVESTIGATIONS

Dengue is essentially a clinical diagnosis. Laboratory tests supplement the diagnosis such as the dengue RNA PCR which aid and can distinguish between different serotypes. Other tests available are the NS-1 antigen assay and the IgM antibody ELISA.

For evaluation of neurological involvement, MRI of the brain is the imaging modality of choice. The findings which are usually seen are cerebral edema, white matter changes and necrosis and brain atrophy. Infarction and haemorrhage are also commonly seen.(61)

TREATMENT

Management of dengue includes careful monitoring and replacement of fluids with correction of electrolytes. In case of neurological involvement, airway must be secured and patient must be started on anti-epileptics if he/she has presented with seizures. If cerebral edema is suspected clinically or on imaging, anti edema measures must be initiated. There is no specific anti-viral therapy for the treatment of dengue encephalopathy, however many studies are underway for new treatment modalities. Since the pathogenesis is immune mediated, there may be a role for immunosuppression.(63)

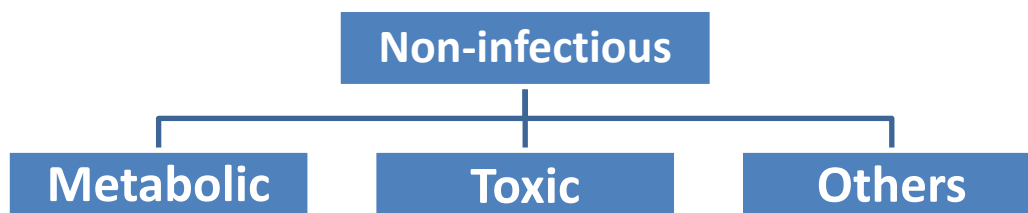
SEPSIS ASSOCIATED ENCEPHALOPATHY

Septic encephalopathy is one of the most common causes of encephalopathy. The pathophysiology of septic encephalopathy is multifactorial including altered blood-brain barrier permeability, inflammatory cytokines, and increase in neurotransmitter octopine. In a

study done on 127 adult patients with AFE 12.7% was diagnosed as sepsis associated encephalopathy. (2)The common sources of community acquired sepsis in our institution are pyelonephritis particularly in diabetic patients and Community acquired pneumonia.

NONINFECTIOUS

Non-infectious can be due to variety of causes which includes metabolic derangements, heat stroke, toxins and others.



ACUTE TOXIC-METABOLIC ENCEPHALOPATHY

Acute toxic-metabolic encephalopathy (TME) encompasses acute confusional state- an acute condition of global cerebral dysfunction in the absence of primary structural brain disease.

PATHOPHYSIOLOGY

All forms of acute toxic-metabolic encephalopathy (TME) interfere with the function of the ascending reticular activating system and/or its projections to the cerebral cortex, leading to impairment of arousal and/or awareness. Ultimately, the neurophysiologic mechanisms of TME include interruption of polysynaptic pathways

and altered excitatory-inhibitory amino acid balance (64). The pathophysiology of TME varies according to the underlying etiology:

- Cerebral edema contributes to acute fulminant hepatic encephalopathy and to hypo-osmolar encephalopathies.
- Drug-induced delirium results from disruption of the normal integration of neurotransmitters, including dopamine, acetylcholine, glutamate, gamma-aminobutyric acid (GABA), and/or serotonin(65).
- Electrolyte derangements alter membrane excitability to produce TME.
- Nutritional disorders disturb cellular energy metabolism and may result in neuronal death.
- Exogenous toxins, including carbon monoxide and cyanide, cause impaired oxygen delivery and mitochondrial dysfunction.

HEAT STROKE

INTRODUCTION — Hyperthermia is defined as elevation of core body temperature above the normal diurnal range of 36 to 37.5°C due to failure of thermoregulation. A temperature above 40°C (or 104°F) is generally considered to be consistent with severe hyperthermia.

There are two types of heat stroke:

- Classic (non-exertional) heat stroke** – Classic heat stroke affects individuals (most often patients over 70 years) with underlying chronic medical conditions

that impair thermoregulation, prevent removal from a hot environment, or interfere with access to hydration or attempts at cooling (66). These conditions include cardiovascular disease, neurologic or psychiatric disorders, obesity, anhidrosis, physical disability, extremes of age, and the use of recreational drugs, such as alcohol or cocaine, and certain prescription drugs, such as anticholinergic agents or diuretics

●**Exertional heat stroke** – Exertional heat stroke generally occurs in young, otherwise healthy individuals who engage in heavy exercise during periods of high ambient temperature and humidity. Typical patients are athletes and military recruits in basic training. In vitro muscle fiber testing, reveals evidence of susceptibility to malignant hyperthermia in some patients who present in this fashion (67).

In addition to an elevated core body temperature, common vital sign abnormalities in heat stroke include sinus tachycardia, tachypnea, a widened pulse pressure, and hypotension (68). If they can respond coherently, patients with heat stroke may complain of weakness, lethargy, nausea, or dizziness. The presentation of elder adults with heat stroke may be subtle and nonspecific early in the course of the disease. Other physical findings may include flushing (cutaneous vasodilation), tachypnea, crackles due to non-cardiogenic pulmonary edema, excessive bleeding, and evidence of neurologic dysfunction, such as altered mentation, slurred speech, irritability, inappropriate behavior, agitation, ataxia and other signs of poor coordination, delirium, seizures, and coma (69). The skin may be moist or dry, depending upon

underlying medical conditions, the speed with which the heat stroke developed, and hydration status (68). Not all victims of heat stroke are volume-depleted.

DIAGNOSIS

The diagnosis of classic (non-exertional) heat stroke is made clinically based upon an elevated core body temperature (generally $>40^{\circ}\text{C}$ [104°F]), central nervous system dysfunction (eg, altered mental status), and exposure to severe environmental heat . Patients with classic heat stroke generally have increased susceptibility to the heat due to age or underlying medical conditions, manifest characteristic examination findings, and lack another explanation for their hyperthermia (eg, infection).

MANAGEMENT

Initial treatment and monitoring — The management of non-exertional (classic) heat stroke requires ensuring adequate airway protection, breathing, and circulation; rapid cooling; and treatment of complications.

Cooling measures, that is evaporative cooling, is the method used most often to treat classic heat stroke because it is effective, noninvasive, easily performed, and does not interfere with other aspects of patient care. When used to treat elderly patients with classic heat stroke, evaporative cooling is associated with decreased morbidity and mortality (70)

JUSTIFICATION

From the literature review, it is evident that acute febrile encephalopathy is a common syndrome encountered by the emergency physicians. Not only is it a common problem, the challenges in diagnosis and the high mortality and morbidity associated with it makes it an important subject to study. We also found from the literature that different geographical locations had different aetiologies causing the same syndrome. Most of the studies on acute febrile encephalopathy has been done in either central or North India. There was no data available on this syndrome from South India. We also find that all studies on acute febrile encephalopathy has only looked into the infectious spectrum but we find that even non-infectious aetiology can have similar presentation. Hence this study aims to study the entire clinical spectrum of patients with acute febrile encephalopathy including both infectious and non-infectious presenting to a tertiary centre in South India and also look at their outcome and the predictors for diagnosis and prognosis.

METHODOLOGY

STUDY DESIGN

This is a prospective observational study done in patients presenting with acute febrile encephalopathy.

SETTING

Location

The study was conducted in Christian Medical College Hospital which is a tertiary care hospital located at Vellore in the state of Tamil Nadu, the Southernmost state of India. The hospital is a 2632 bedded hospital which caters to the need of people in various states including Tamil Nadu, Andhra Pradesh, West Bengal and many others. It has a department of Accident and Emergency medicine which tends to about 200 patients per day including medical and surgical emergencies and trauma

Period of Recruitment

The study was conducted for a period of one year from June 2015 to May 2016

Follow up

The patients were followed up till discharge and 1 month after discharge through telephonic interview.

Data collection

The study was explained in detail to the participants and their close relatives and they were provided with an information sheet about the study (Annexure 1). Participants

were included after obtaining written consent either from the patient directly or from their close relative if the participant was otherwise indisposed (Annexure 2). For participants between the ages of 15 and 18 years, consent was obtained from the legal guardian and assent was taken from the participant.

PARTICIPANTS

All patients admitted in the adult emergency department with Acute Febrile Encephalopathy (AFE) fulfilling the inclusion criteria were included in the study.

Inclusion criteria

1. Age > 16 years.
2. Fever <14 days duration.
3. Altered mental status+/-meningeal signs(headache, nuchal rigidity, photophobia)

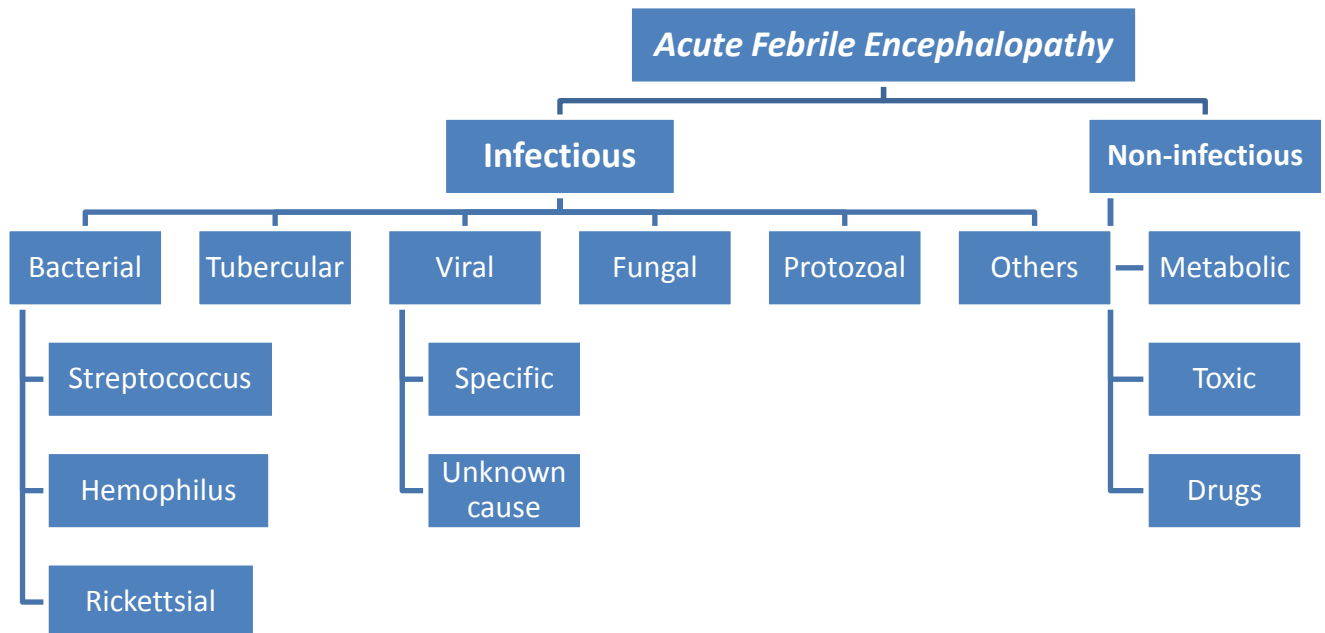
Exclusion Criteria

1. Patients with acute cerebrovascular accident(hemorrhage/infarct)
2. Patients with head injury /trauma

Patients with HIV and pregnancy were not excluded from the study so as to study the spectrum of AFE in them.

VARIABLES

Primary etiology of acute febrile encephalopathy



Primary outcome

Mortality

Mortality at discharge

Mortality at 1 month

Functional Outcome

Modified Rankin Score at discharge

Modified Rankin score at 1 month

Secondary outcomes

1. Seasonal distribution of the primary etiology
2. Duration of hospital stay
3. Duration of ICU stay
4. Inotropic requirement
5. Ventilator requirement

6. Ventilator free days
7. Hospital acquired infection
8. Other organ dysfunction

Diagnostic criteria

Acute viral meningoencephalitis with specific etiology

Acute febrile encephalopathy +/- Meningitis with CSF pleocytosis of more than 5 WBC/cumm in addition to the following criteria

**Absence of detectable bacterial pathogen on CSF smear/culture or blood culture
AND/OR**

EEG/MRI/CT evidence of parenchymal disease AND/OR

Positive CSF study for viral pathogen

CSF serology or CSF viral Culture or multiplex PCR AND

Negative for Tuberculous meningitis criteria.

Acute viral meningoencephalitis (no specific etiology)- Unknown cause

Acute febrile encephalopathy +/- Meningitis with CSF pleocytosis of more than 5 WBC/cumm in addition to the following criteria

**Absence of detectable bacterial pathogen on CSF smear/culture or blood culture
AND/OR**

EEG/MRI/CT evidence of parenchymal disease AND/OR

Negative CSF study for viral pathogen

CSF serology or CSF viral Culture or multiplex PCR AND

Negative for Tuberculous meningitis criteria.

Bacterial meningitis

Acute febrile illness with clinical features of meningitis and EITHER of the following

Gram staining of CSF positive for meningitis causing bacteria OR

A CSF culture positive for a known bacterial pathogen OR

A blood culture positive for a known meningitis causing bacteria i.e.

Streptococcus pneumoniae, *Haemophilus influenzae* type b, *Neisseria meningitidis*, *Streptococcus suis*, *Staphylococcus aureus*, *Enterobacteriaceae* spp etc.

Scrub typhus meningitis/encephalitis

Acute febrile illness with clinical features of meningitis or altered sensorium (AND)

Scrub typhus IgM ELISA positive with or without a characteristic eschar

Tuberculous meningitis

Acute febrile illness with clinical features of altered mental status+/- meningitis
and:

Ziehl-Neelsen stain of CSF positive for acid fast bacilli OR

A CSF culture positive for tuberculous bacilli OR

CSF Xpert-MTB RT-PCR analysis positive for TB OR

Neuroimaging (CT/MRI scan) consistent with TB meningitis (hydrocephalus,
basal meningeal enhancement etc.) OR

Any other source positive for tuberculosis (lymph node biopsy / sputum smear /
tissue biopsy / bone marrow biopsy / Chest x ray findings etc.) AND/OR

Clinician's decision about the diagnosis

Febrile Metabolic encephalopathy

Acute febrile illness (differentiated /undifferentiated) with no acute CNS
infection AND any one of the following

Hyponatremia (Se Na < 125 meq) AND Correction of sodium reverses the
altered sensorium OR

Hypernatremia(Se Na > 145 meq) OR

Hypoglycemia(Se Glucose < 40) OR

Hyperglycemia (DKA OR HHS) OR

Hypercalcemia(Se calcium >10) AND No other etiology to explain the altered
sensorium

Hyperthermia (Body Temperature- >105.1F/40.9C) HEAT STROKE

Febrile Toxic encephalopathy

Acute febrile illness(differentiated /undifferentiated) with no acute CNS infection AND

History of Acute consumption of Toxins (Alcohol) / Drug followed by altered mental status

Septic encephalopathy:

Fever with altered mental status AND Features of sepsis include infection (documented or suspected) and some of the following

General variables

- **Temperature>38.3 or <36**
- **HR >90**
- **RR>20**
- **Altered mental status**
- **Significant edema**
- **Hyperglycemia(plasma glucose >140 mg/dL) in the absence of diabetes**

Inflammatory variables

- **Leucocytosis(WBC >12000),leukopenia(WBC <4000)**
- **Normal WBC with >10% immature forms**
- **Plasma CRP >2 SD above normal value**
- **Plasma procalcitonin>2 SD above normal value**

Hemodynamic variables

- **Arterial hypotension(SBP<90 mm Hg,MAP<70 mm Hg)**

Tissue perfusion variables

- **Hyperlactetemia(>1 mmol/L)**
- **Decreased capillary refill**

Organ dysfunction variables

- Arterial hypoxemia (PaO₂/FiO₂ <300)
- Acute oliguria(<0.5ml/hr for >2 hours despite fluid resuscitation)
- Creatinine increase>0.5 mg/dl
- Coagulation abnormalities(INR>1.5 or aPTT>60 sec)
- Ileus(absent bowel sounds)
- Thrombocytopenia(platelet count<100000)
- Hyperbilirubinemia(TB >4 mg/dL)

Modified Rankin Scale

- | | |
|----------|-----------------------------------------------------------------------------------------------------------------------------|
| 0 | No symptoms at all |
| 1 | No significant disability despite symptoms; able to carry out all usual duties and activities |
| 2 | Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance |
| 3 | Moderate disability; requiring some help, but able to walk without assistance |
| 4 | Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance |
| 5 | Severe disability; bedridden, incontinent and requiring constant nursing care and attention |
| 6 | Dead |

MEASUREMENT OF DATA

Data was entered into a clinical research form(CRF) by the principal investigator.

Data collection was done by the principal investigator at patient presentation to hospital followed by outcome assessment at discharge and 1 month through telephonic interview.

The clinical data was documented in the CRF (Annexure 3) by the principal investigator. The following details were noted specifically

- 1. Clinical features-Signs and symptoms**
- 2. Comorbidities**
- 3. Laboratory findings**
- 4. Hospital stay and ICU admission**
- 5. Outcomes –Mortality and functional outcome**

SAMPLE SIZE

Sample size was based on the proportion expected to have modified Rankin scale (mRS) of more >3 at 1 month (mRS> 3 implies dependent functional status).

From previous studies(1), this was assumed it to be 6% and with a 3% precision for 95% confidence intervals, we calculated a sample size of 250 patients.

STATISTICAL ANALYSIS

Data was entered using Epidata version 3 and data analysis was done using Statistical Package for the Social Sciences (SPSS) software package (version 16). Continuous study variables were described using mean with standard deviation and discrete variables were summarized using frequencies with percentages. The diagnostic predictors for etiology and outcome predictors were identified using bivariate analysis and logistic regression analysis with odds ratio and 95 % confidence interval. A *P*-value less than 0.05 was considered significant.

FUNDING AND APPROVAL

SOURCE OF FUNDING

A FLUID research grant was approved from the institution for the purpose of this study.

INSTITUTIONAL RESEARCH BOARD APPROVAL AND ETHICAL CONSIDERATIONS

The research proposal for Study was discussed by the Institutional Review Board in 2015 and approval was obtained [IRB Min. No. 9450 dated 05.06.2015][Annexure 4]. There were no ethical issues related to this study.

RESULTS

This prospective observational study was done in a tertiary hospital located in Tamil Nadu, the southernmost state of India. The study was conducted for one year duration from June 2015 to May 2016. All patients admitted in the emergency department were screened for the eligibility criteria and a total of 265 patients were included in the study. Presenting symptoms, signs, comorbidities, laboratory findings viz haematological, biochemical tests and CSF findings were obtained. They were further classified into infectious and non-infectious category based on the pre specified diagnostic criteria. The infectious causes accounted for majority of the aetiology (70.5%) while non-infectious aetiology contributed to (29.5 %). The infectious group was classified further based on whether it was a primary central nervous system (CNS) related infection or sepsis associated. The CNS infections have been classified based on the type of organism as bacterial, viral, fungal or protozoal infections.

The non-infectious causes were classified into metabolic, heat related and toxin related. The mortality and functional outcome were assessed at discharge and 1 month. All 265 patients were followed up till discharge and 247 patients were followed up at 1 month. Eighteen (18) patients were lost to follow up at 1 month.

The following is summarised in the strobe figure 4.

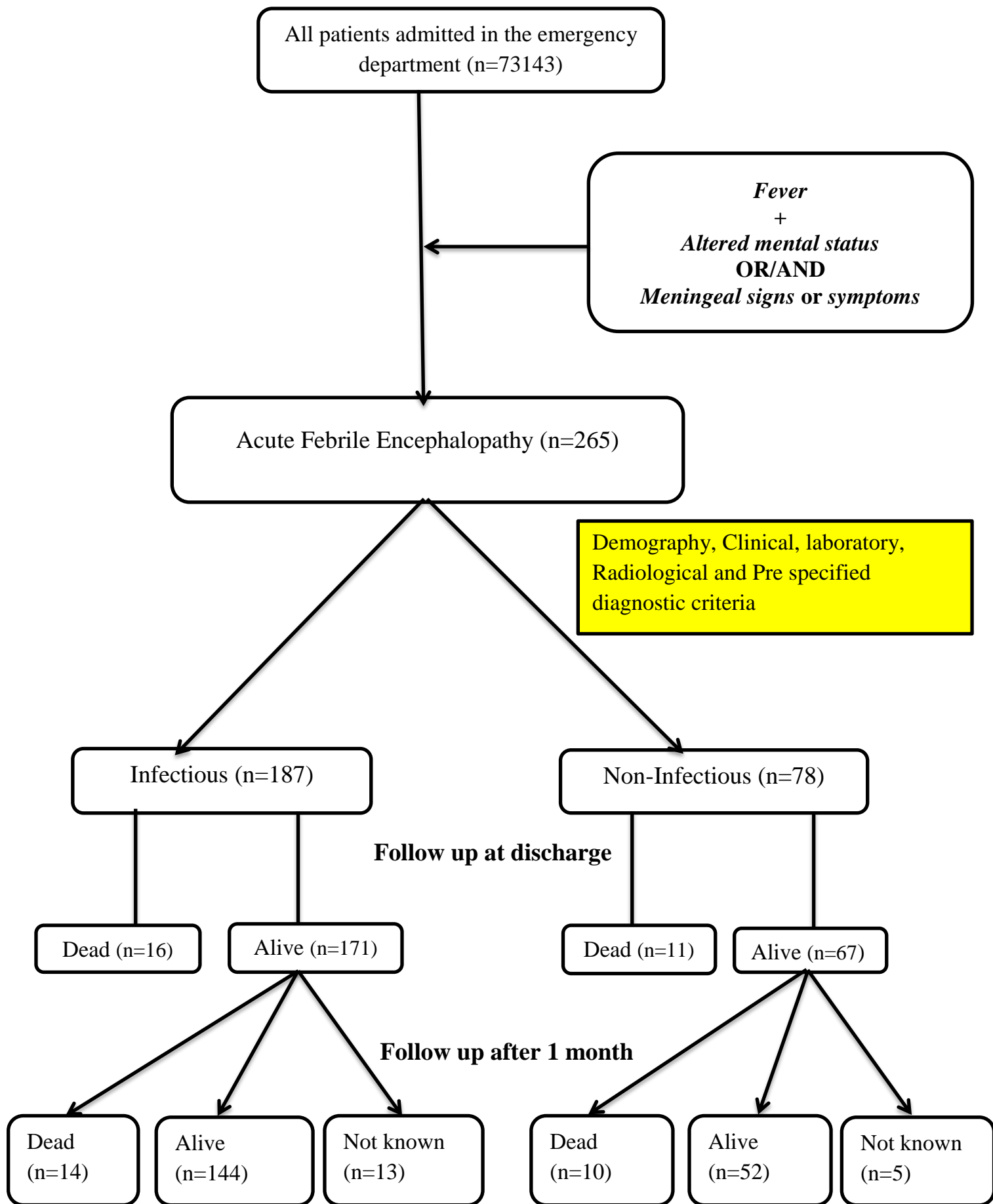


Figure 4 Strobe Figure

BASELINE CHARACTERISTICS OF THE STUDY POPULATION

DEMOGRAPHIC CHARACTERISTICS

The study cohort comprised of 265 patients. The 265 patients were classified into infectious and non-infectious category based on the primary aetiology according to the pre specified criteria. The demographic details of the cohort namely the age, sex, occupation and state of domicile are shown in Table 2

Table 2 Demographic details of the study population

	Infectious No. (%)	Non infectious No. (%)	Total No. (%)
Age			
15-29	58(31)	9(11.5)	67(25.3)
30-44	43(23)	8(10.3)	51(19.3)
45-59	37(19.8)	24(30.8)	61(23)
60-74	40(21.4)	29(37.1)	69(26)
>=75	9(4.8)	8(10.3)	17(6.4)
Sex			
Male	111(59.4)	43(55.1)	154(58.1)
Female	76(40.6)	35(44.9))	111(41.9)
State			
Tamil Nadu	129(69)	69(88.5)	198(74.7)
Andhra Pradesh	50(26.7)	7(9)	57(21.5)
West Bengal	3(1.6)	1(1.3)	4(1.5)
Others	5(2.7)	1(1.3)	6(2.3)
Occupation			
Housewife	68(36.4)	31(39.7)	99(37.4)
Student	27(14.4)	5(6.4)	32(12.1)
skilled	10(5.3)	3(3.8)	13(4.9)
Unskilled	75(40.1)	37(47.4)	112(42.3)
Others	7(3.7)	2(2.6)	9(3.4)

SEX WISE DISTRIBUTION

The male : female ratio in the cohort were almost equal with male showing a slight preponderance as shown in the figure 5. The sex distribution within the subcategory (Infectious and non-infectious) also showed a similar pattern with men slightly predominant over the women 59.4% vs 40.6% in the infectious group and 55.1% vs 44.9% in the non-infectious group.(figure 6)

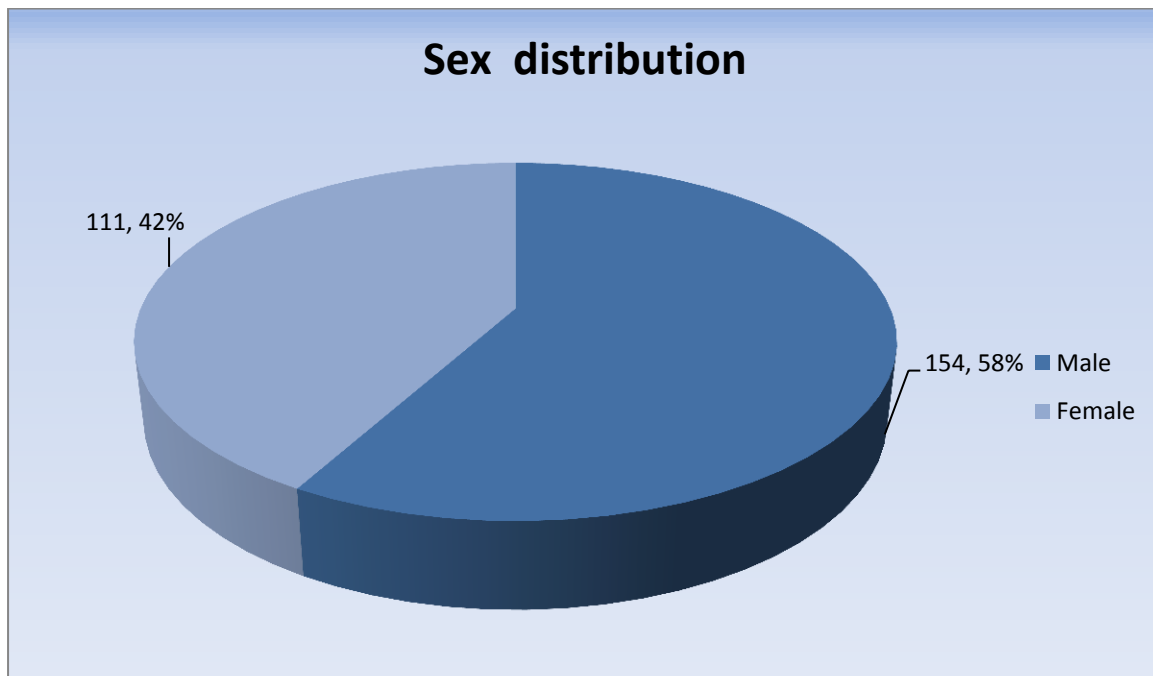


Figure 5 Sex wise distribution of the study population

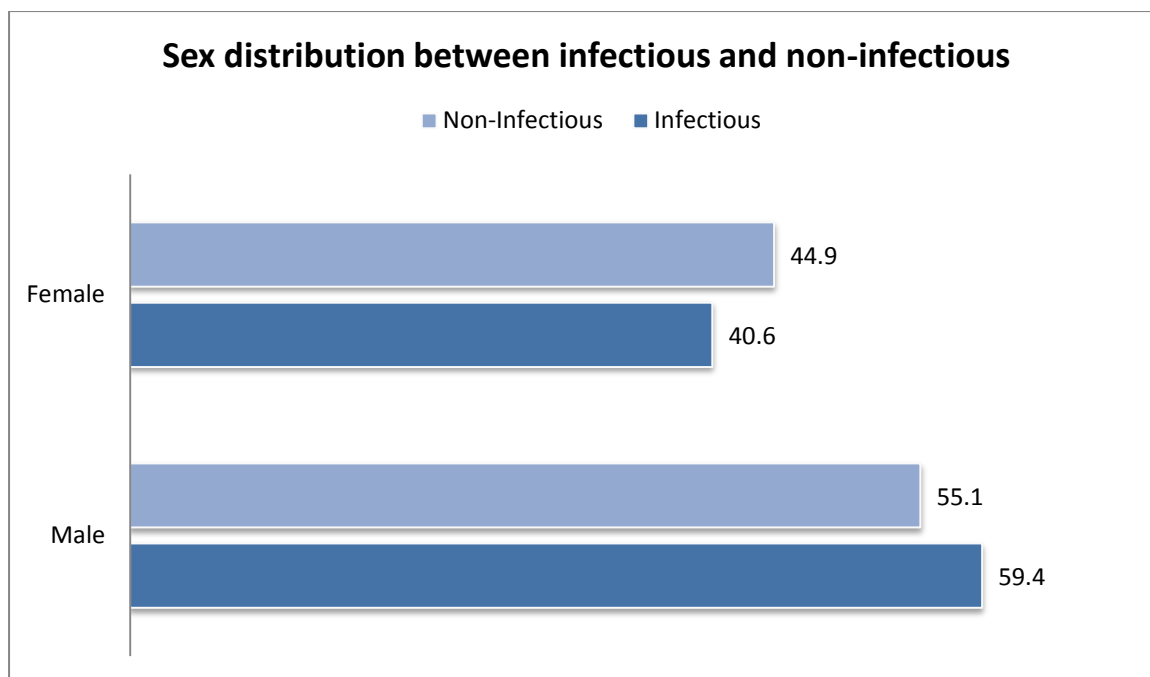


Figure 6 Sex distribution between the infectious and non-infectious group of the study population

AGE WISE DISTRIBUTION

The age distribution of the cohort ranged from 15-86. The Mean (SD) age of the cohort was 46.89 (\pm 19.8). Infectious causes predominate among the younger age group with frequency decreasing with increasing age. The inverse is true of non-infectious causes for Acute febrile encephalopathy which is more common with advancing age. The above findings are shown in the figure 7.

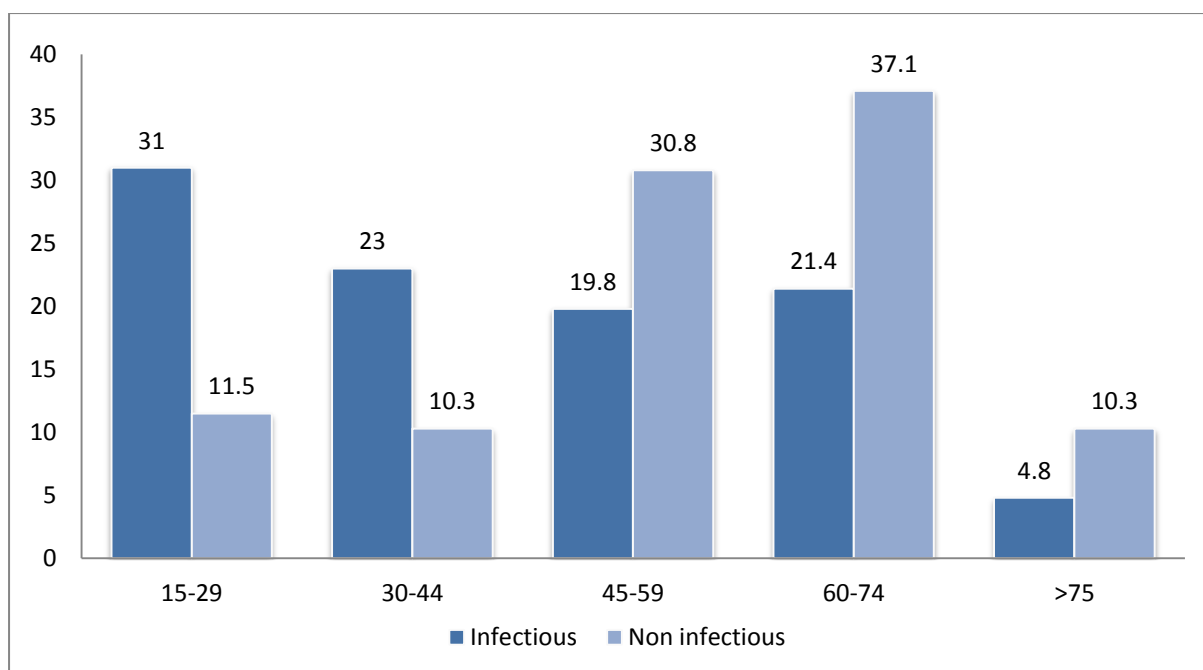


Figure 7 Age distribution between infectious and non-infectious group of the study population

STATE OF DOMICILE

Majority of the patients in the cohort were from the two states of Tamil Nadu (74.7%) and Andhra Pradesh (21.5%) which is the catchment area of this hospital, however few patients also came from other states. (Figure 8)

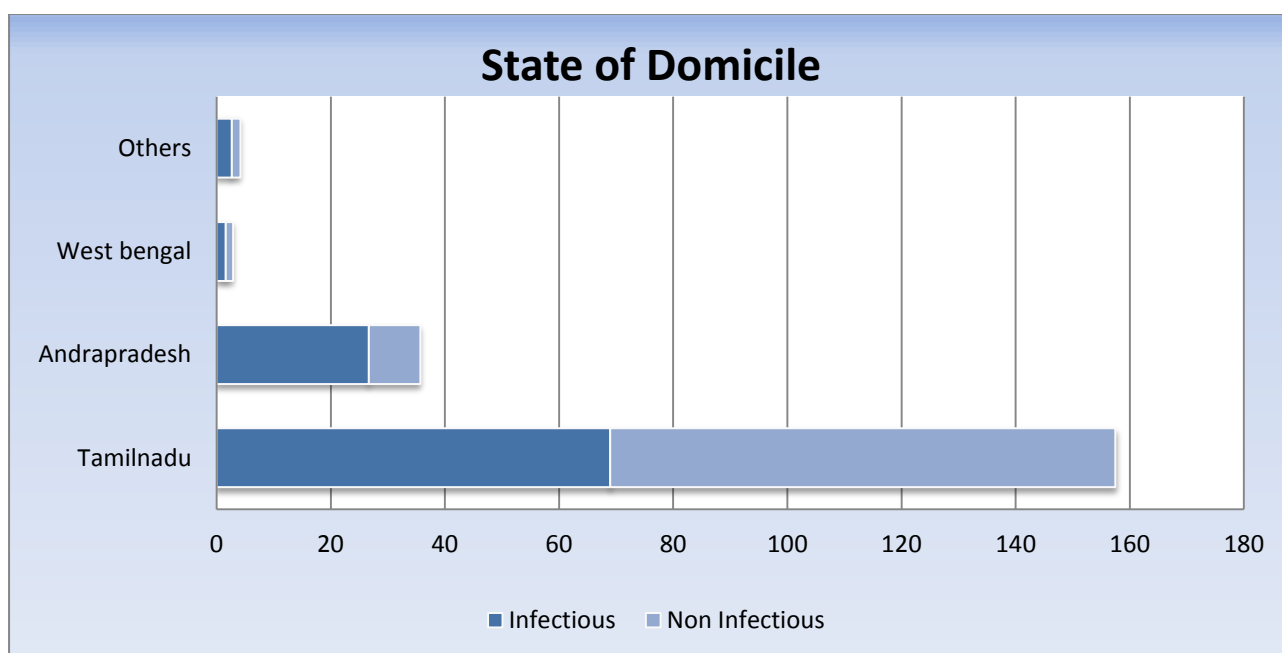


Figure 8 State of Domicile of the study population

OCCUPATION OF THE STUDY POPULATION

Figure 9 represents the distribution of the occupation of the study cohort. Majority of the male patients were unskilled workers (N=112 42.3%) and among the female patients, majority were housewives(N=99,37.4%). Majority were either house wives or unskilled workers as this is a common occupation given during registration in the hospital. Housewives, unskilled and skilled workers were equally distributed among both the infectious and non-infectious group. Most of the students were in the infectious group, probably related to age distribution of infectious etiology.

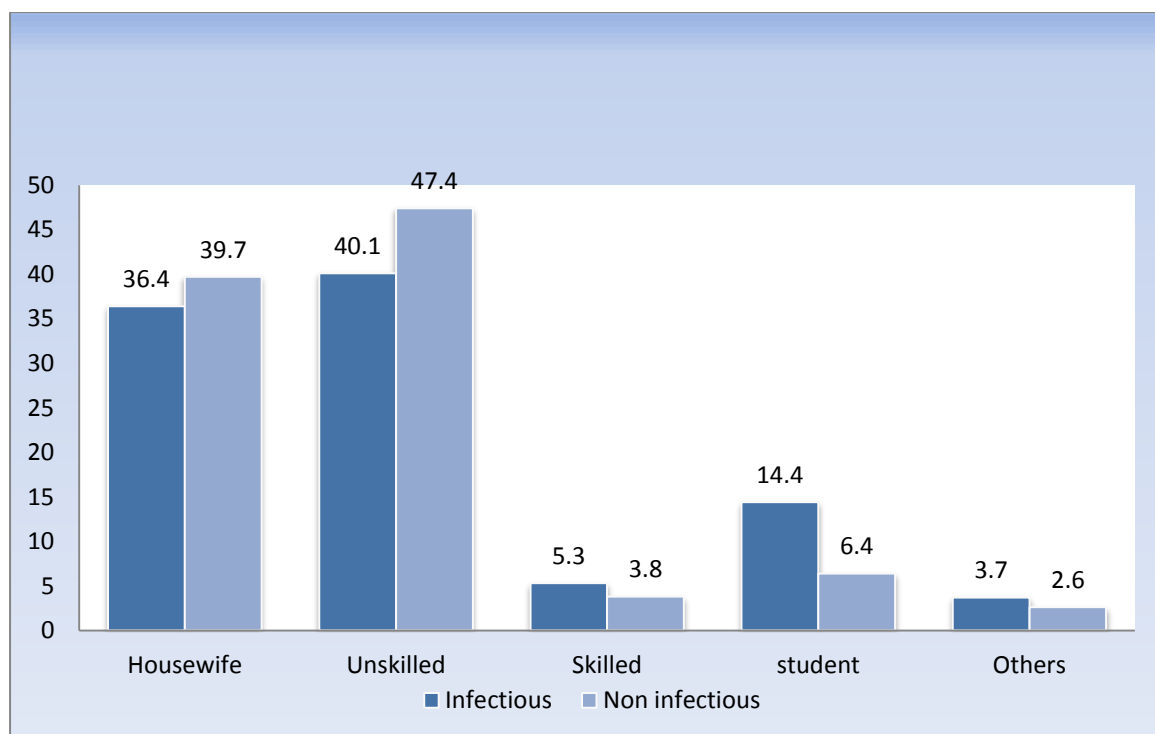


Figure 9 Occupation of the study population

CLINICAL CHARACTERISTICS OF THE STUDY POPULATION

The clinical and laboratory characteristics of the study population is summarised in the table 3.

Table 3 Clinical characteristics of the study population

	Infectious (n=187)	Non -infectious (n=78)	Total (n=265)
Age—years No.(%)			
Mean \pm SD	43.4(18.78)	55.27(17.63)	46.89(19.2)
Median	40	59	48
Range	15-86	16-85	15-86
Sex—No. (%)			
Male	111(59.4)	43(55.1)	154(58.1))
Female	76(40.6)	35(44.9)	111(41.9)
Signs and Symptoms—No. (%)			
Altered sensorium	160(85.6)	77(98.7)	237(89.4)
Head ache	106(56.7)	13(16.7)	119(44.9)
Vomiting	91(48.7)	20(25.6)	111(41.9)
Seizures	59(31.6)	20(25.6)	79(29.8)
Nuchal rigidity	91(48.7)	9(11.5)	100(37.7)
Papilledema	12(6.4)	—	12(4.5)
Cranial nerve palsy	5(2.7)	—	5(1.9)
Focal neurologic deficits	21(11.2)	3(3.8)	24(9.1)
Vital Status — No. (%)			
Tachypnea(RR>20)	62(33.2)	10(12.8)	72(27.2)
Tachycardia(HR>90)	66(35.3)	13(16.7)	79(29.8)
Hypotension (MAP<70mHg)	20(10.7)	12(15.4)	32(12.1)
SBP(<90mmHg)	15(8)	9(11.5)	24(9.1)
Temperature(>104F)	7(4.2)	27(36.5)	34(14.1)
Hypoxia (SpO ₂ <92%)	23(12.7)	22(28.9)	45(17.5)
GCS			
Median(Range)	13(2-15)	12(3-15)	13(2-15)
Mean \pm SD	12.03(3.11)	11.24(3.27)	11.8(3.17)
Intubation at admission— No. (%)	23(12.3)	12(15.4)	35(13.2)
Comorbidities— (No.%)			
Diabetes mellitus	47(25.1)	33(42.3)	80(30.2)

Hypertension	34(18.2)	27(34.6)	61(23)
Cerebrovascular accident	4(2.1)	6(7.7)	10(3.8)
Chronic kidney disease	3(1.6)	1(1.3)	4(1.5)

Laboratory findings Mean \pm SD

Total count cells/mm ³	12966.4(5995.15)	13250(7021.8)	13050(6303)
Platelets cells/mm ³	2222820(12624)	192126(90700)	213778(117563)
Creatinine mg/dl	1.23(1.08)	1.46(1.1)	1.29(1.1)
Urea mg/dL	45.46(36.2)	46.43(37.9)	45.76(36.69)
SGOT U/L	64.06(66.2)	344.16(1565)	147(860)
SGPT U/L	40	38	78(450)
Sodium mmol/L	132.05(7.21)	125.65(12.25)	130.15(9.45)
Lab abnormalities N(%)			
Abnormal WBC count(>12000 or <4000)	93(50)	41(52.6)	134(50.8)
Neutrophilia(>75% on DC)	113(60.8)	55(70.5)	168(63.6)
Thrombocytopenia(<50000)	14(7.7)	8(10.5)	22(8.5)
Renal dysfunction(creat>1.2mg/dl)	48(26.7)	34(44.2)	82(31.9)
SGOT(>115U/L)	24(13.2)	14(18.2)	38(14.7)
SGPT(>120U/L)	14(7.7)	7(9.1)	21(8.1)
Uremia(>40mg/dl)	49(38)	24(41.4)	73(39)

CSF Mean(\pm SD)

Total Count (/cumm)	382.1(1166.59)	4.3(6.65)	312.03(1062)
Glucose (mg/dL)	71.07(38.5)	93.8(44.01)	75.31(40.52)
Protein (mg/dL)	161.7(170.58)	55.5(38.62)	141.84(160.04)

	Infectious(n=187)	Non Infectious(n=78)	Total(n=265)
Hospital stay- days — Mean \pm SD	8.7(6.63)	8.99(8.62)	8.78(7.42)
ICU admission —No.(%)	40(22.2)	14(17.9)	54(20.9)
mRS pre admission No.(%)			
<2	176(94.1)	68(87.2)	244(92.1)
\geq 2	11(5.8)	10(12.8)	21(8)
2-3	9(4.8)	6(7.7)	15(5.7)
4-6	2(1)	4(5.1)	6(2.3)

SYMPTOMS AT PRESENTATION

The predominant signs and symptoms at presentation of the whole study population with subcategorization into infectious and non-infectious group is shown in figure 10 . We found that altered sensorium was present in almost all cases of non-infectious aetiology.(98.7% vs 85.6%).Headache was the predominant symptom in the infectious group (56.7% vs 16.7%).Seizures were present almost equally in the two groups. Features of meningism and increased intracranial pressures such as nuchal rigidity, vomiting, papilledema and cranial nerve palsy was predominantly seen in the infectious group.

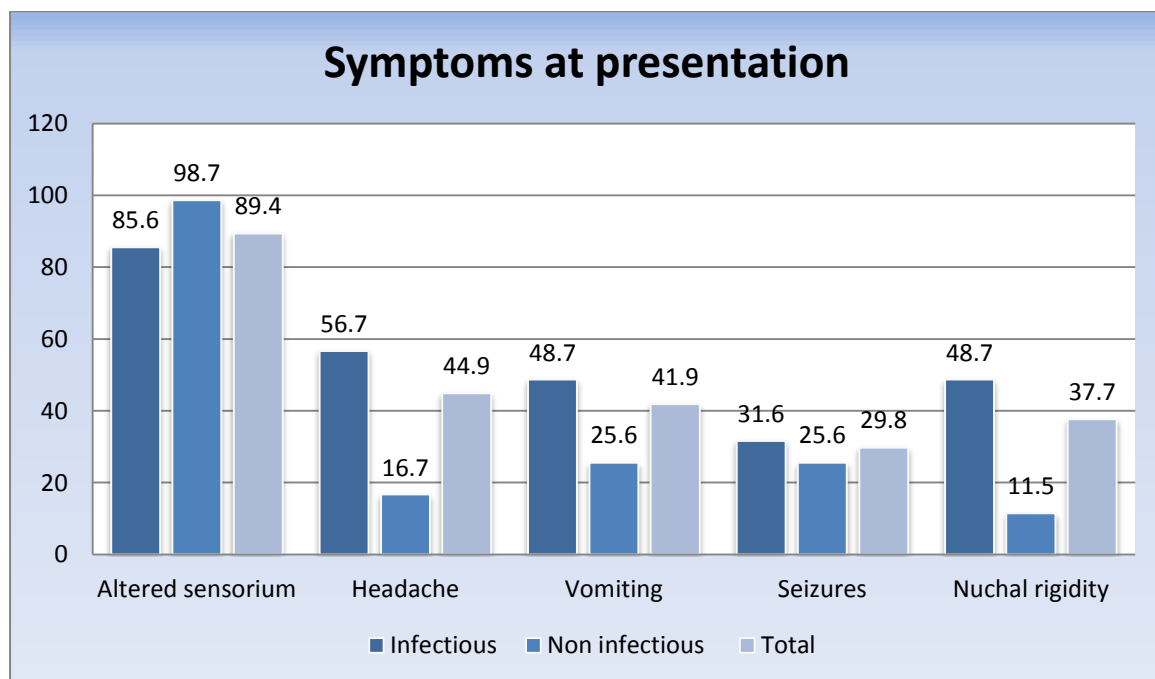


Figure 10 Symptoms at presentation of the study population

VITAL STATUS AT ADMISSION

The vital status of the cohort is shown in figure 11. We found that hypotension at presentation was seen more in the non-infectious group as compared to the infectious group (15.4 vs 10.). Features of SIRS such as tachycardia and tachypnea were more seen in the infectious group than non-infectious group 33.2 % and 35.3% vs 12.8% and 16.7% respectively. Very high temperature recording at admission of >104F at presentation was seen more commonly in the non-infectious group than infectious (36.5% vs 4.2%) due to heat related illness. Saturation at presentation was similar in both the groups.

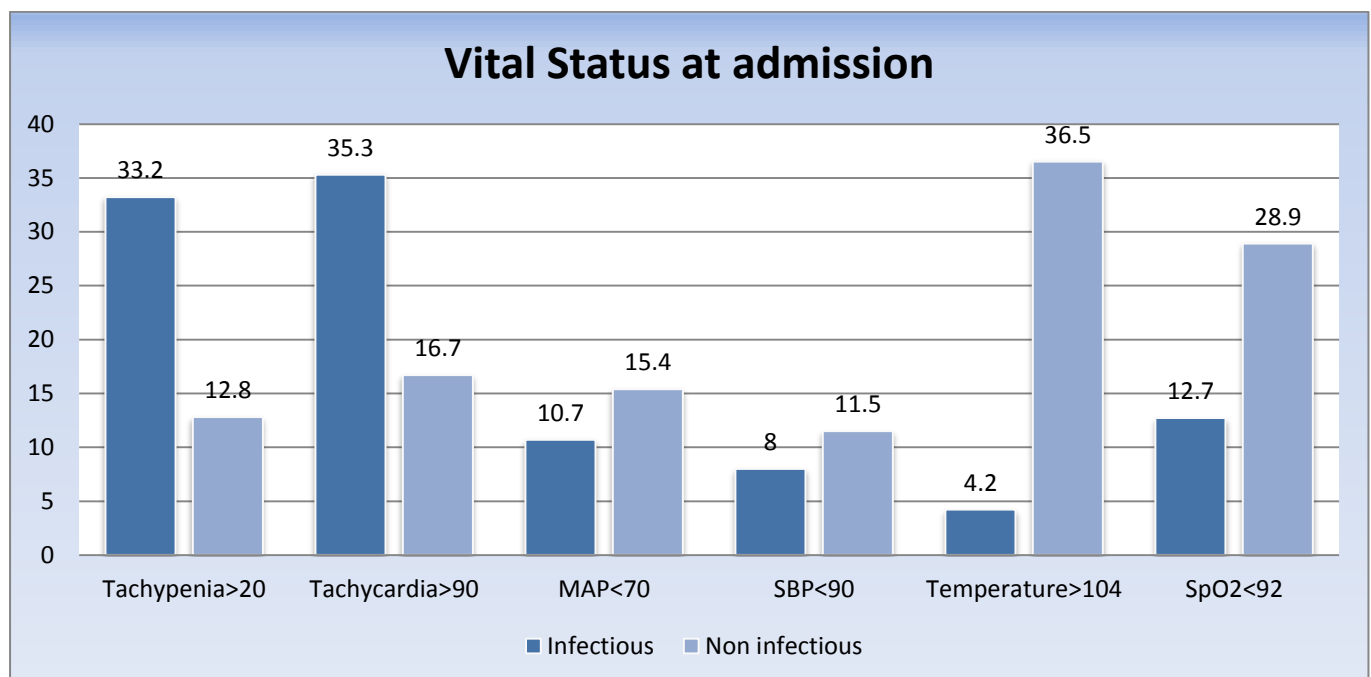


Figure 11 Vital status of the study cohort at admission

INTUBATION AT ADMISSION:

Intubation rates among the infectious and non-infectious groups at admission were similar; 12.3% and 15.4% respectively (Figure 12)

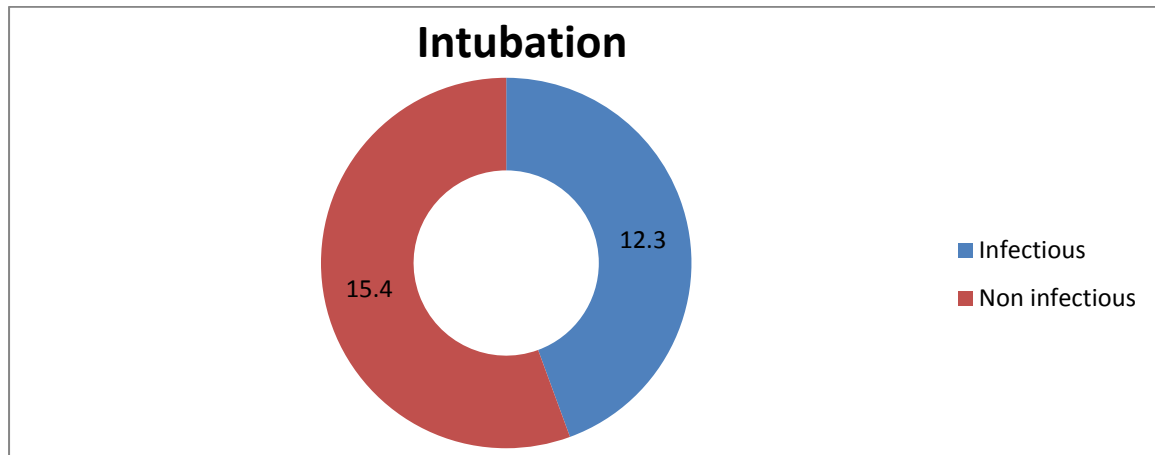


Figure 12 Intubation at admission

COMORBIDITIES OF THE STUDY POPULATION

Hypertension and Diabetes mellitus were the common comorbidities seen in the study population is shown in the figure 13. As expected, both diabetes and hypertension were more in the non-infectious group than the infectious group; 42.3 and 34.6% vs 25.1% and 18.2% respectively.

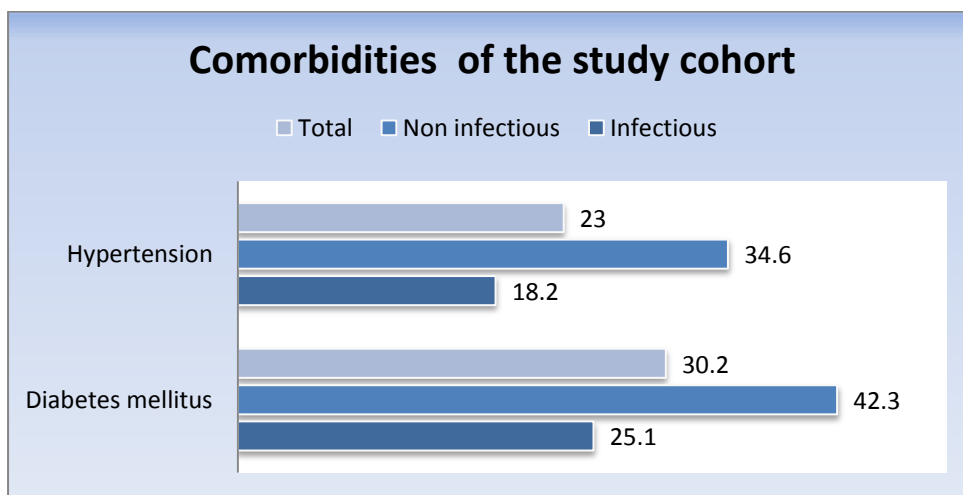


Figure 13 Diabetes and Hypertension among infectious and non-infectious group

ICU ADMISSION

The number of patients in the infectious and non-infectious group who required admission into intensive care were 22.2% and 17.9% respectively. This is depicted in the figure 14

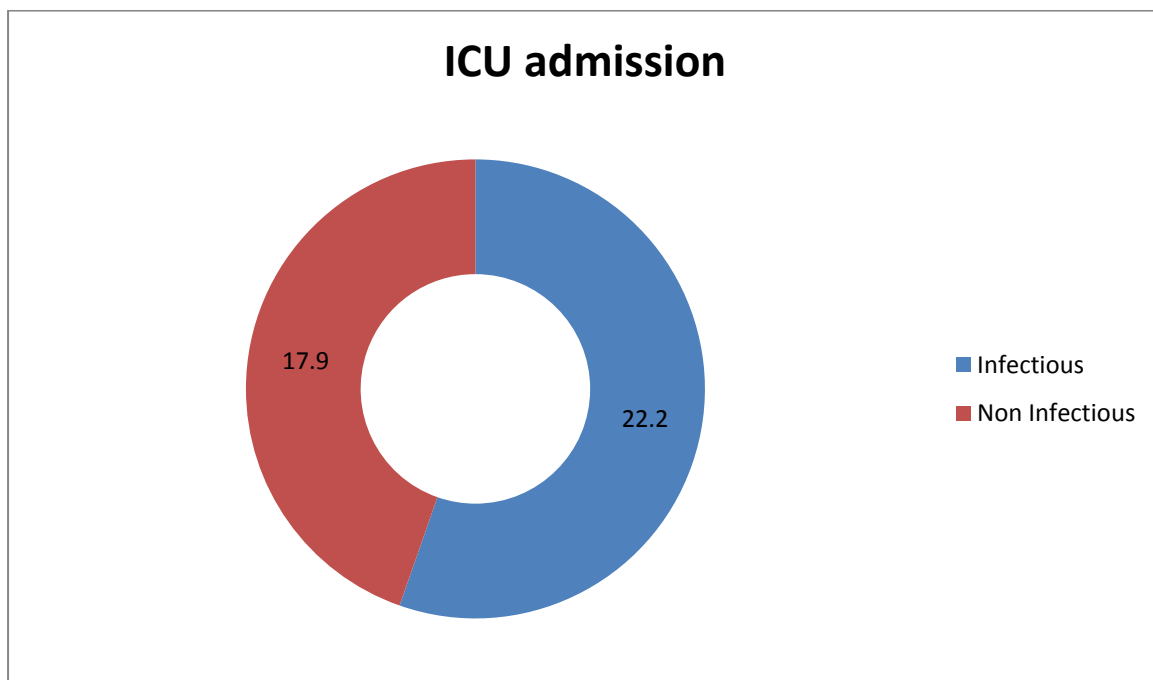


Figure 14 ICU admission

BASE LINE MODIFIED RANKIN SCORE OF THE COHORT

The baseline modified Rankin score of the study cohort is shown in the figure 15.

Majority in the infectious and non-infectious group had a baseline mRS of less than two, however the number of patients with mRs>2 were more in the non-infectious group compared with the infectious group.

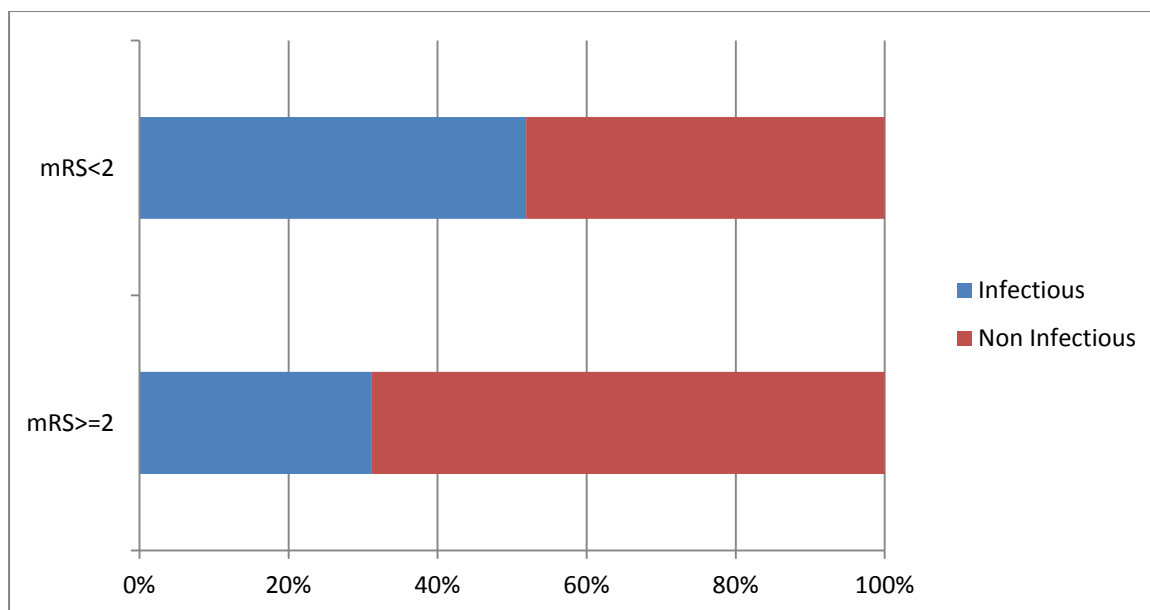


Figure 15 Baseline modified Rankin score between infectious and non-infectious group

LABORATORY CHARACTERISTICS:

The biochemical and clinical pathological tests findings were similar among the two groups, probably due to heterogeneity of the data, given the varying etiologies.

However the cerebrospinal fluid assessment revealed higher white blood counts, lower glucose level and higher protein level among the infectious group compared to the non-infectious group. (Figure 16)

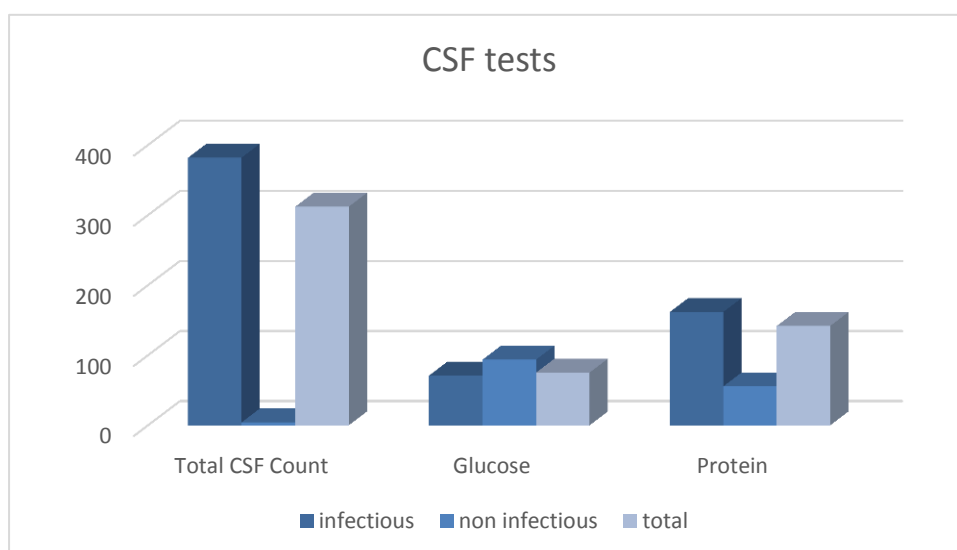


Figure 16 Cerebrospinal fluid findings

PRIMARY ETIOLOGY

The primary aetiology of all the patients in the study cohort as defined by the pre-specified criteria is tabulated in the table 4

Table 4 Primary aetiology of the study population

Acute Febrile encephalopathy(n=265)	
Infectious (n=187)N(%)	
Bacterial47(25)	
Pyogenic	12(6.4)
Scrub typhus	33(17.6)
Leptospirosis	1(0.5)
Typhoid	1(0.5)
Tubercular	45(24)
Viral101(53.7)	
Specific aetiology	
Herpes Simplex virus	3(1.6)
Dengue	5(2.6)
Varicella zoster virus	2(1)
Epstein bar virus	8(4.2)
Adeno virus	1(0.5)
Total	18(9.6)
Unknown aetiology	64(34.2)
Fungal	2(1)
Parasitic	2(1)
Primary CNS infection	179
Sepsis associated	14(7.4)
Total	193
Non Infectious(n=78)	
Metabolic	
Hyperthermia(heat stroke)	48(61.5)
Hyponatremia	7(9)
Hyperglycemia	5(6.4)
Hypercalcemia	1(1.3)
Hepatic encephalopathy	1(1.3)
Toxin	
Alcohol related	5(6.4)
Drugs	5(6.4)
Others	6(7.6)
Total	78
Grand Total	271

INFECTIOUS VERSUS NON INFECTIOUS

The proportion of infectious and non-infectious aetiology in the study cohort is shown in the figure 17. Infectious aetiology was the predominant cause for acute febrile encephalopathy accounting to 71%.

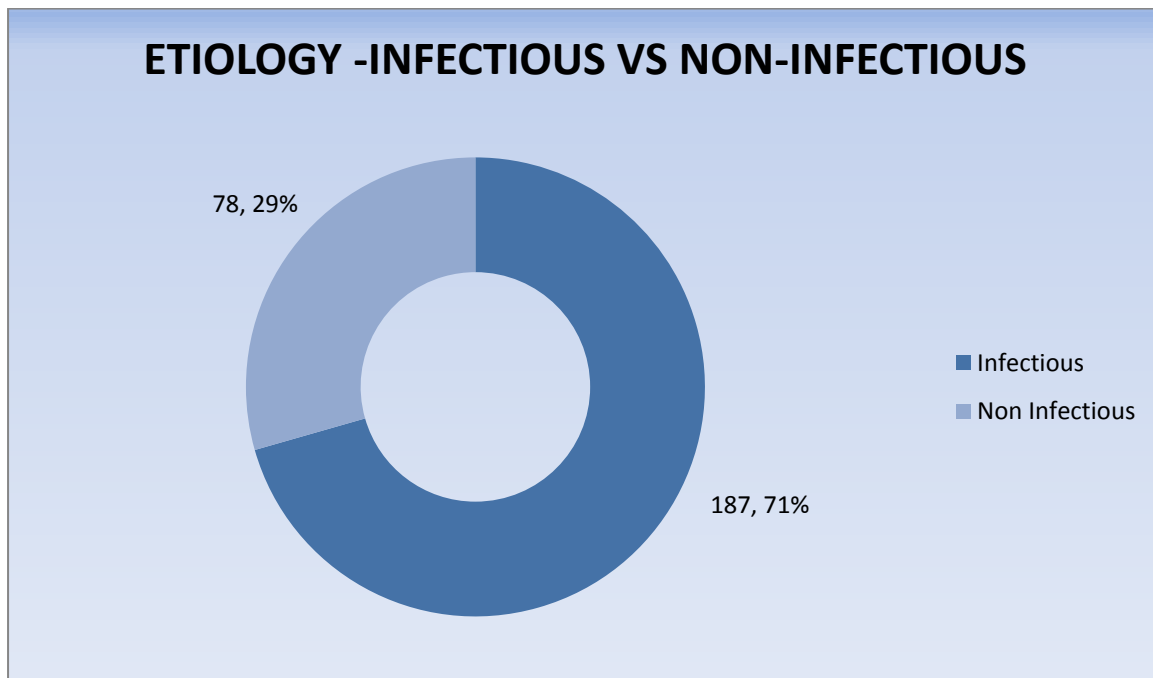


Figure 17 Etiology-Infectious versus Non-infectious

INFECTIOUS ETIOLOGY AMONG THE COHORT

As shown in figure 18, among the infectious spectrum, aseptic/viral meningoencephalitis was the most common aetiology corresponding to 82 percent. Out of which a specific aetiology could be identified only in 18.8 %. The remaining was classified as aseptic meningitis of unknown aetiology. Among the bacterial causes, scrub meningitis was the most common followed by pyogenic meningitis. Leptospirosis and salmonella were seen in one case each.

Tuberculous meningitis was diagnosed in 45 patients (45.24%) Parasitic and fungal were also seen in 2 cases each.

Sepsis associated encephalopathy was seen in (7.4%) cases all of them were culture proven.

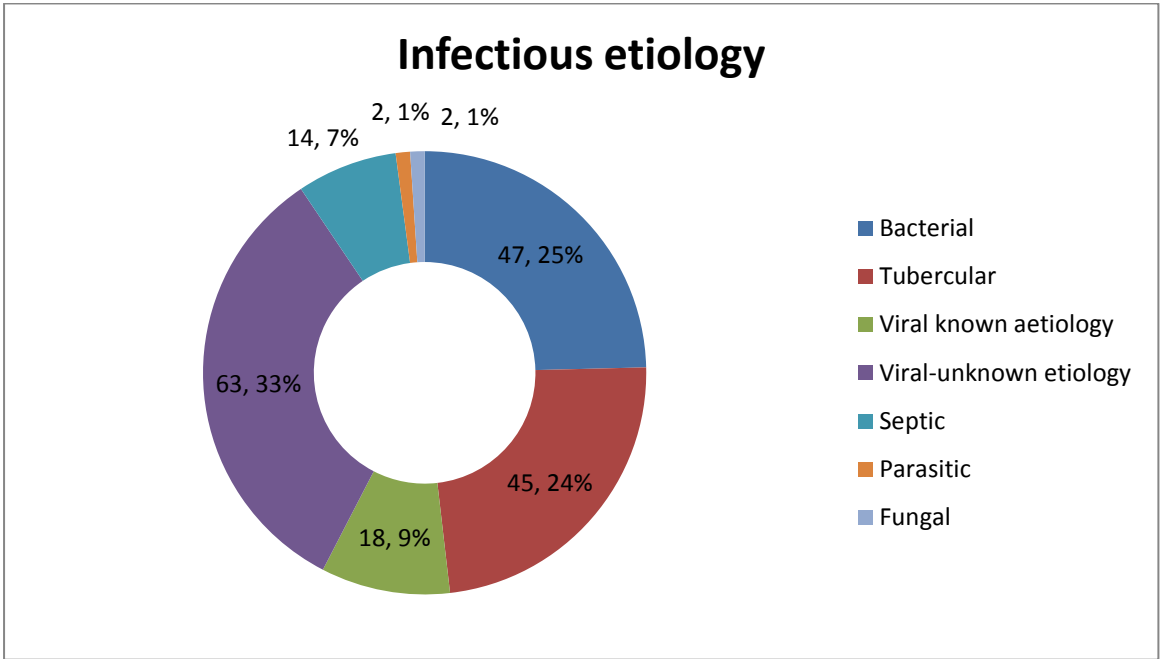


Figure 18 Infectious etiology

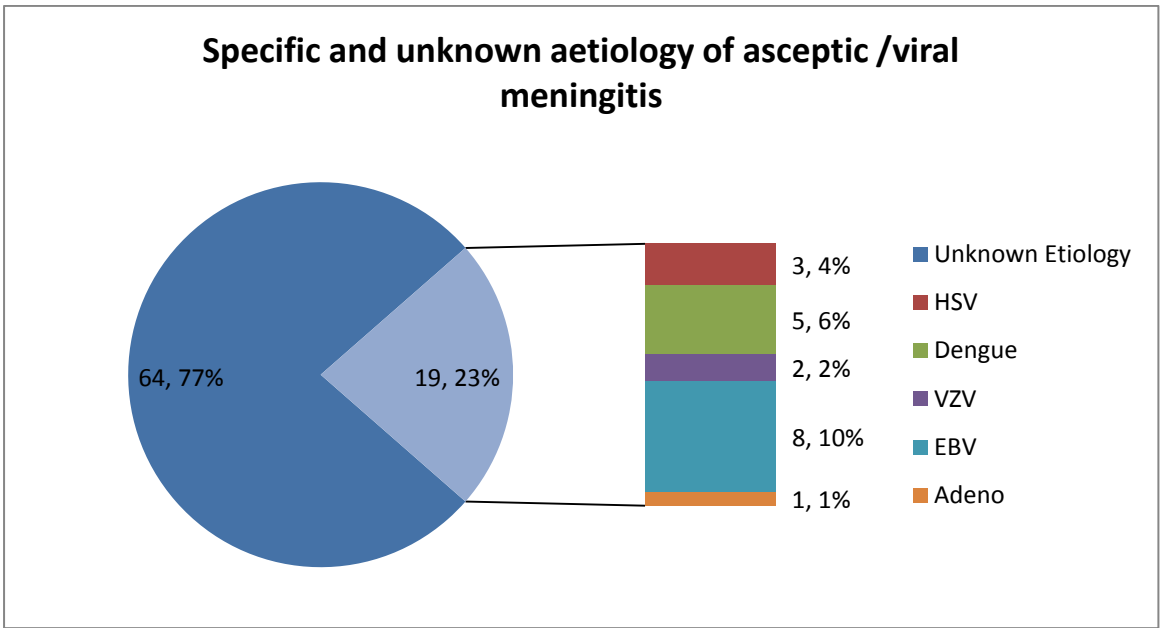


Figure 19 Specific viral etiologies

SPECIFIC AETIOLOGY OF THE NON-INFECTIOUS SPECTRUM

The non-infectious spectrum was further classified as metabolic, toxin, drugs and others. The proportion in each category is shown in figure 20.

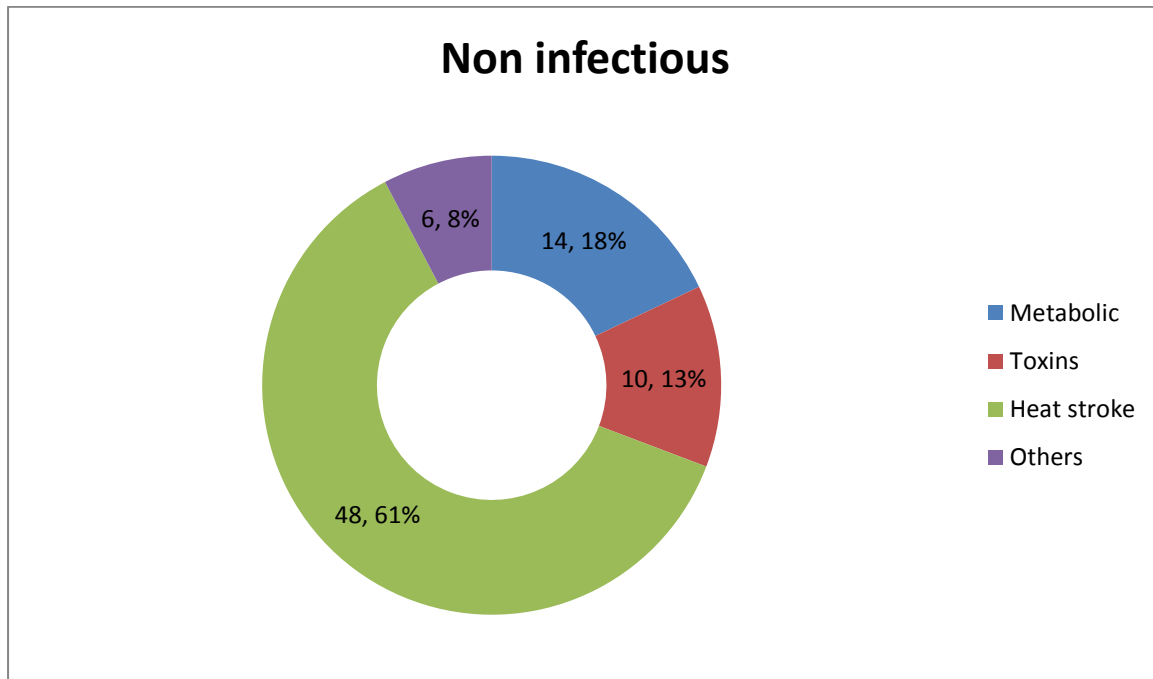


Figure 20 Non-infectious aetiology

Metabolic was the most common non-infectious aetiology of acute febrile encephalopathy. Among the non-infectious causes, hyperthermia (Heat stroke) formed the majority of the cases (62%). The remaining were as follows which is shown in figure 20. Alcohol was the most common toxin related aetiology. Others (n=6) included Auto-immune encephalitis (n=4), brain metastasis (n=1) and acute psychosis with undifferentiated febrile illness (n=1) contributed to (7.6%).

PRIMARY OUTCOME

The primary outcome namely the mortality at discharge, one month and modified Rankin score at discharge and one month is shown in the table 5

Table 5 Primary outcome of the study population

Outcome N (%)s	Infectious (n=187)	Non-Infectious (n=78)	Total (n=265)
Mortality at 1 month	30(16)	21(26.9)	51(20.1)
Mortality at discharge	16(8.5)	11(14.1)	27(10.2)
Mortality between discharge and 1 month	14(7.5)	10(12.8)	24(9)
mRS at 1month —No (%)			
>=2	49(28.7)	32(48.8)	81(32.7)
0-1	124(71.2)	41(56.2)	166(67.2)
2-3	15(8.6)	7(9.6)	22(8.9)
4-6	35(20.1)	25(39.2)	59(23.8)
mRS at discharge— No (%)			
>=2	70(37.6)	43(55.1))	113(42.6)
0-1	117(62.5)	35(44.9)	152(57.3)
2-3	21(11.3)	14(17.9)	35(13.2)
4-6	49(26.3)	29(37.2)	78(29.4)

Figure 21, 22 depicts the modified Rankin score of the study cohort at baseline and the trend of the score from baseline to discharge and one month.

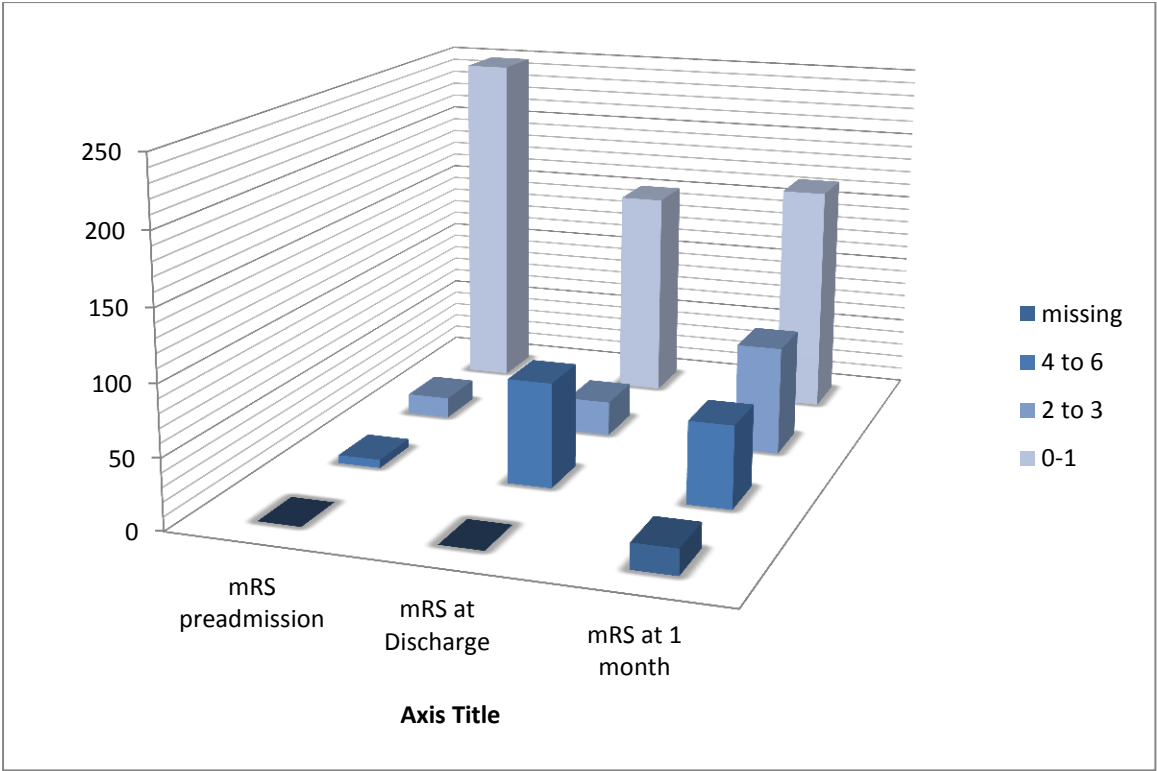


Figure 21 Modified Rankin sore at baseline, discharge and one month

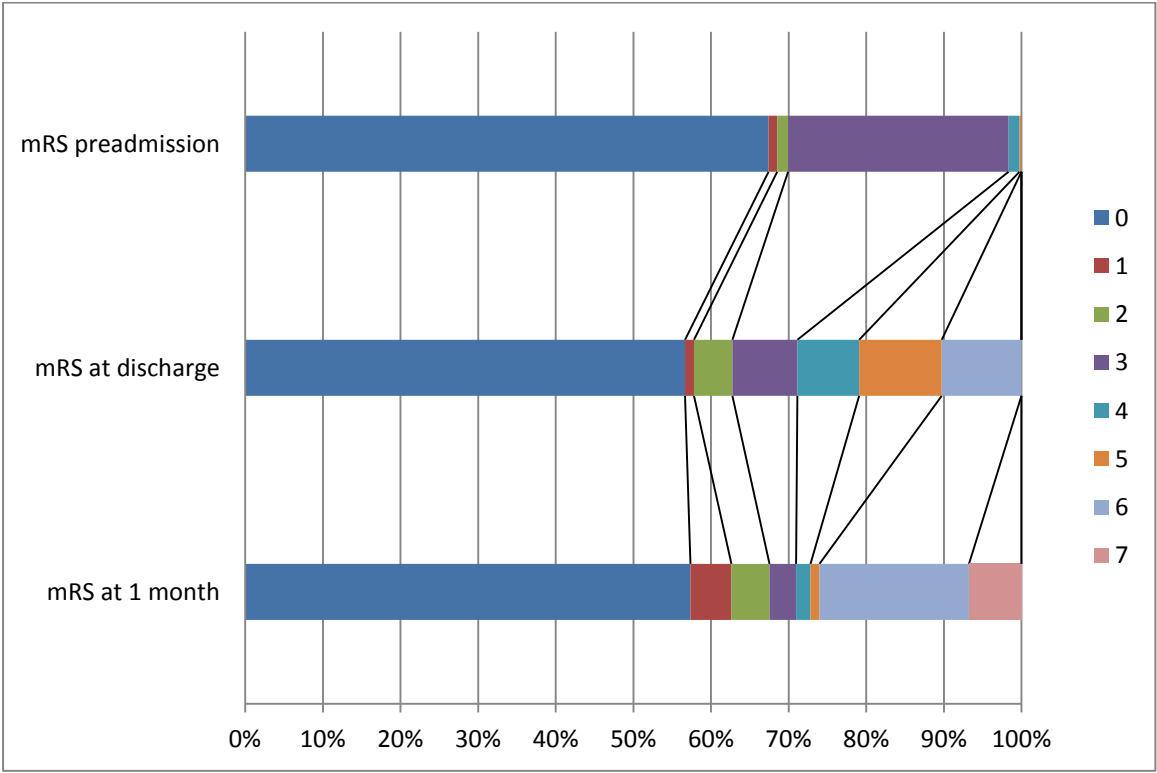


Figure 22 Trend of modified Rankin score from baseline to discharge and one month

MORTALITY AT DISCHARGE AND AT 1 MONTH :

The mortality at discharge was 10.2%, and 20.1% at 1 month. This is depicted in Figure 22. There was a significant number of death after discharge (10.2%). The mortality within the infectious and non-infectious group at discharge and one month is also shown in figure 23. One in five patients who presented with AFE were dead at 1 month after admission.

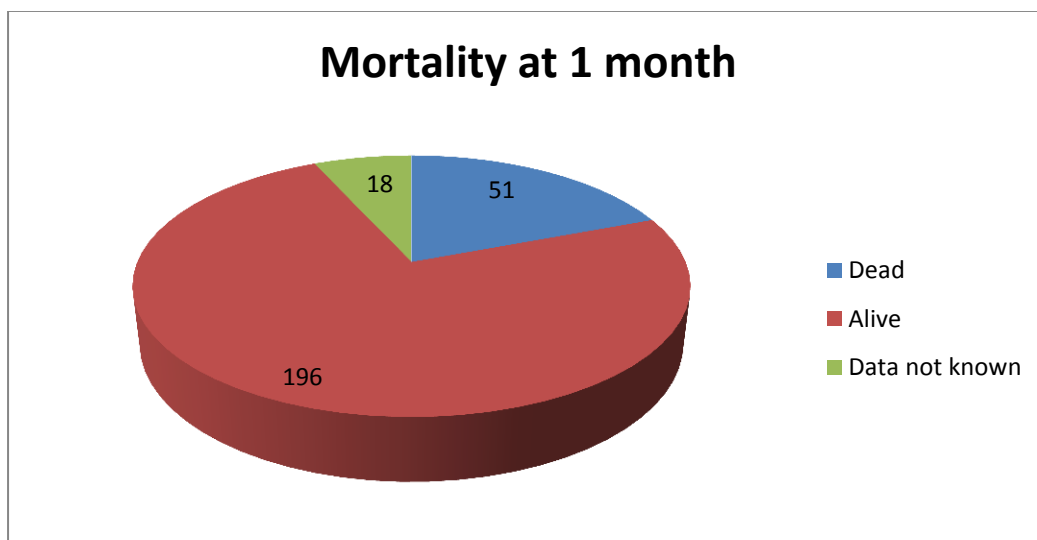


Figure 21 Mortality at one month of the study population

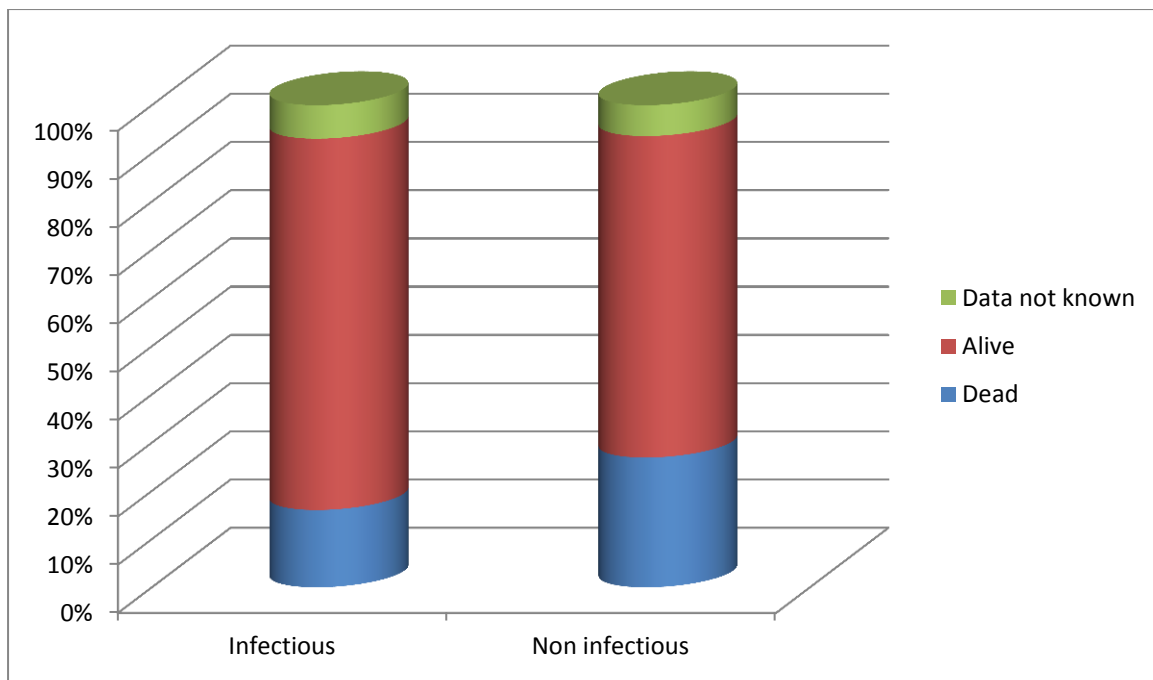


Figure 22 Mortality at one month between infectious and non-infectious

DIAGNOSTIC PREDICTORS

SYMPTOMS AND DIAGNOSIS

Differentiation between infectious and non-infectious etiology based on presenting symptoms is paramount for prompt initiation of appropriate management. Bivariate analyses of presenting symptoms were found to be significant in predicting infectious aetiology as shown in table 6. Head ache, vomiting, nuchal rigidity, focal deficits and cranial nerve palsies at presentation was found to be significant predictors of infectious cause of acute febrile encephalopathy. Presence of altered sensorium at presentation favours a non-infectious etiology.

Table 6 Symptoms and diagnosis

	Infectious No.(%)	Non-Infectious No.(%)	Unadjusted odds ratio(95% CI)	P value
Altered mental status				
Yes	180 (67.5)	77 (32.5)	0.08(0.01-0.58)	0.001
No	27 (96.4)	1 (36)		
Headache				
Yes	106 (89.1)	13 (10.9)	6.54(3.38-12.69)	<0.001
No	21 (95.5)	65 (44.5)		
Seizures				
Yes	59 (74.4)	20 (25.3)	1.34(0.74-2.62)	0.379
No	128 (68.8)	58 (31.2)		
Vomiting				
Yes	91 (82)	20 (18)	2.75(1.53-4.93)	0.001
No	96 (62.3)	58 (37.7)		
Nuchal Rigidity				
Yes	91 (96)	9 (9)	7.27(3.43-15.41)	<0.001
No	96 (58.2)	69 (41.8)		
Papilledema				
Yes	12 (100)	0 (0)	1.45(1.33-1.57)	0.021
No	175 (69.2)	78 (30.9)		
Focal Neurologic deficits				
Yes	21 (87.5)	3 (12.5)	3.16(0.92-10.93)	0.062
No	166 (68.9)	75 (31.1)		
Cranial Nerve palsy				
Yes	5 (100)	0 (0)	14.3(1.32-1.55)	0.326
No	183 (70)	78 (30)		
Intubation				
Yes	23 (65.7)	12 (34.3)	0.77(0.36-1.64)	0.551
No	164 (71.3)	66 (28.7)		

SIGNS AND DIAGNOSIS

Predictors of etiology based on clinical findings at presentation were analysed using bivariate analysis. Features of SIRS such as tachycardia, tachypnea and hypoxia (SpO₂<92%) were found to be significant predictors of infectious cause of acute febrile encephalopathy as seen in table 7. High temperature >104F predicted a non - infectious etiology.

Table 7 Signs and diagnosis

	Infectious No.(%)	Non- Infectious No.(%)	Unadjusted odds ratio (95% CI)	P value
GCS				
<=8	30 (69.8)	13 (30.2)	0.96(0.47-1.93)	1
>8	157 (20.7)	65 (29.3)		
Respiratory rate				
>20	62 (86.1)	10 (13.9)	3.37(1.63-7)	0.001
<=20	125(64.8)	68 (35.2)		
Pulse rate				
>90	66 (83.5)	13 (16.5)	2.73(1.4-5.31)	0.003
<=90	121(65.1)	65 (34.9)		
SBP				
<90	15 (62.5)	9 (37.5)	0.67(0.28-1.6)	0.357
>=90	172 (71.4)	69 (28.6)		
MAP				
<70	20 (62.5)	12 (37.5)	0.66(0.31-1.42)	0.304
<=70	167 (71.7)	66 (28.3)		
SpO₂				
>92	158 (74.5)	54 (25.5)	2.79(1.44-5.42)	0.004
<=92	23 (51.1)	22 (48.9)		
Temperature				
>=104	7 (20.6)	27 (79.4)	0.07(0.03-0.18)	<0.001
<104	160 (77.3)	47 (22.7)		
PaO₂				
<60	76 (71.7)	30 (28.3)	1.69(0.55-5.16)	0.375
>60	9 (60)	6 (40)		
P/F ratio				
<=200	46 (62.2)	28 (37.8)	0.44(0.13-1.45)	0.278
>200	15 78.9)	4 (21.1)		

COMORBIDITIES AND DIAGNOSIS

Diabetes mellitus and hypertension were the common comorbidities in the study cohort. History of either of these comorbidities were found to be significant predictors of non- infectious cause of acute febrile encephalopathy.

Table 8 Comorbidities and diagnosis

	Infectious No. (%)	Non- Infectious No. (%)	Unadjusted odds ratio (95% CI)	P value
Diabetes Mellitus				
Yes	47 (58.8)	33 (41.3)	0.46(0.26-0.8)	0.008
No	140 (75.7)	45 (24.3)		
Hypertension				
Yes	34 (55.7)	27 (44.3)	0.42(0.23-0.76)	0.006
No	153 (75)	51 (25)		
Cerebrovascular accident				
Yes	4 (40)	6 (60)	0.26(0.07-0.96)	0.069
No	183 (71.8)	72 (28.2)		
Chronic Kidney disease				
Yes	3 (75)	1 (25)	1.26(0.13-12.26)	1
No	184 (70.5)	77 (29.5)		

LAB FINDINGS AND DIAGNOSIS

Bivariate analysis of few lab findings were found to be significant in predicting infectious versus non-infectious aetiology as shown in table 9. Low sodium(<125nmol/L) at presentation were found to be significant predictor of non-infectious cause of acute febrile encephalopathy, while high creatinine (>1.2mg/dl) predicted an infectious etiology .

Table 9 Lab findings and diagnosis

	Infectious No.(%)	Non- Infectious No.(%)	Unadjusted odds ratio (95% CI)	P value
Leucocytosis				
Yes	93 (69.4)	41 (30.6)	0.90(0.53-1.53)	0.787
No	93 (71.5)	37 (28.5)		
Neutrophilia(>75%)				
Yes	73 (76)	23 (24)	1.55(0.88-2.73)	0.161
No	113 (67.3)	55 (32.7)		
Platelet count(<50000)				
Yes	17 (89.5)	2 (10.5)	3.81(0.86-16.93)	0.069
No	165 (69)	74 (31)		
SGOT(>115U/L)				
Yes	24 (63.2)	14 (36.8)	0.68(0.33-1.41)	0.338
No	158 (71.5)	63 (28.5)		
SGPT(>120U/L)				
Yes	14 (66.7)	7 (33.3)	0.84(0.32-2.17)	0.804
No	167 (70.5)	70 (29.5)		
Creatinine(1.2mg/dl)				
Yes	48 (58.5)	34 (41.5)	0.46(0.26-0.80)	0.008
No	132 (75.4)	43 (24.6)		
Urea(>40mg/dl)				
Yes	49 (67.1)	24 (32.9)	1.15(0.61-0.80)	0.746
No	164 (78.8)	44 (21.2)		
Sodium(<125nmol/L)				
Yes	20 (37)	34 (63)	6.34(3.28-12.08)	<0.001
No				

CSF FINDINGS AND DIAGNOSIS

Bivariate analysis of cerebrospinal fluid analysis were found to be significant in predicting infectious versus non-infectious aetiology as shown in table 10. Elevated CSF counts (>5 cells), elevated protein (>45) and neutrophilia (>75%) at presentation were found to be significant predictors of infectious cause of acute febrile encephalopathy.

Table 10 CSF findings and diagnosis

	Infectious No.(%)	Non- Infectious No.(%)	Unadjusted odds ratio (95% CI)	P value
CSF Total count				
>5/cmm	140 (96.6)	5 (3.4)	0.46(0.26-0.8)	0.008
<5/cmm	18 (36.7)	31 (63.3)		
CSF Neutrophils				
>75%	34 (55.7)	27 (44.3)	0.42(0.23-0.76)	0.006
<75%	153 (75)	51 (25)		
CSF Protein				
>45mg/dl	4 (40)	6 (60)	0.26(0.07-0.96)	0.069
<45mg/dl	183 (71.8)	72 (28.2)		
CSF Glucose				
<45mg/dl	3 (75)	1 (25)	1.26(0.13-12.26)	1
>45mg/dl	184 (70.5)	77 (29.5)		

OUTCOME PREDICTORS

DEMOGRAPHY AND OUTCOME PREDICTION

Bivariate analysis of age and sex was done to predict mortality at 1 month as shown in table11. Age greater than 40 was found to be significant predictor of mortality at 1 month whereas sex did not have any role in predicting mortality.

Table 11 Demography and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
Age				
<40	13(12.6)	90(87.4)	0.43(0.22-0.87)	0.01
>40	35(25)	105(75)		
Sex				
Male	32(22.4)	111 (77.60)	1.28(0.68-2.4)	0.525
Female	19 (18.4)	84 (81.6)		

SYMPTOMS AND OUTCOME

Presenting symptoms that could predict mortality at 1 month were analysed by bivariate analysis and presented in Table 12. Intubation at admission was found to be predictor of poor outcome of mortality at 1 month with an odds ratio of 4.32 whereas presence of headache and vomiting at presentation favours a good outcome with an odds ratio of 0.33 and 0.47 for mortality. The above finding could be due to the fact that headache and vomiting predicted an infectious and hence a treatable cause of AFE.

Table 12 Symptoms and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
Altered mental status				
Yes	50 (22.7)	170 (77.3)	6.91(0.91-52.35)	0.035
No	1 (3.8)	25 (96.2)		
Headache				
Yes	12 (10.9)	98 (89.1)	0.33(0.16-0.7)	0.002
No	39 (28.7)	96 (71.3)		
Seizures				
Yes	15 (20)	60 (80)	0.84(0.41-1.65)	0.726
No	36 (21.4)	135 (78.6)		
Vomiting				
Yes	15 (14.9)	86 (85.1)	0.47(0.24-0.95)	0.034
No	36 (24.8)	109 (75.2)		
Nuchal Rigidity				
Yes	13 (14.3)	78 (85.7)	0.56(0.28-1.12)	0.133
No	38 (24.5)	117 (75.5)		
Papilledema				
Yes	3 (37.5)	5 (62.5)	2.53(0.58-10.99)	0.195
No	48 (20.2)	190 (79.8)		
Focal Neurologic deficits				
Yes	7 (30.4)	16 (69.6)	1.91(0.74-4.94)	0.177
No	14 (19.7)	179 (81.3)		
Cranial Nerve palsy				
Yes	1 (20)	4 (80)	1.02(0.11-9.3)	1
No	50 (20.7)	191 (79.3)		
Intubation				
Yes	15(46.9)	17 (53.1)	4.32(1.94-9.51)	<0.001
No	36 (16.8)	178 (83.2)		

SIGNS AND OUTCOME

The clinical findings at presentation that predicted mortality at 1 month were GCS<8, low systolic blood pressure (<90mmHg), low Mean arterial pressure of<70mmHg, temperature of >104F and saturation< 92% at admission, with odds ratio of 6, 4.19,2.8 , 2.7 and 3 respectively for mortality.

Table 13 Signs and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
GCS				
<=8	21 (51.2)	20 (48.8)	6.012(2.97-12.64)	<0.001
>8	30 (14.6)	175 (85.4)		
Respiratory rate				
>20	10 (15.6)	54 (84.4)	0.64((0.239-1.36)	0.285
<=20	41 (22.5)	141 (77.5)		
Pulse rate				
>90	12 (16.4)	61 (83.6)	0.68(0.33-1.38)	0.307
<=90	39 (22.5)	134 (77.5)		
SBP				
<90	11(47.8)	12 (52.2)	4.19(1.73-10.18)	0.002
>=90	40 (17.9)	183 (82.1)		
MAP				
<70	12 (38.7)	19 (61.3)	2.85(1.28-6.35)	0.016
>=70	39 (18.1)	176 (81.9)		
SpO2				
<92	21 (47.7)	23 (52.3)	3.06(1.49-6.29)	<0.001
>=92	29 (14.9)	166 (85.1)		
Temperature				
>=104	12 (37.5)	20 (62.5)	2.70(1.21-6.05)	0.015
<104	35 (18.1)	158 (81.9)		
PaO2				
<60	27 (27.6)	71 (72.4)	0.76(0.24-2.43)	0.759
>60	5 (33.3)	10 (66.7)		
P/F ratio				
<200	7 (38.9)	11 (61.1)	1.68(0.57-4.96)	0.392
>200	19 (27.5)	50 (72.5)		

COMORBIDITIES AND OUTCOME

Presence of diabetes mellitus as comorbidity were found to be a significant predictor of mortality at 1 month with odds ratio of 2.51(1.33-4.74) .

Table 14 Comorbidities and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
Diabetes Mellitus				
Yes	24 (32)	51 (68)	2.51(1.33-4.74)	0.006
No	27 (15.8)	144(84.2)		
Hypertension				
Yes	17(29.8)	40(70.2)	1.94(0.98-3.82)	0.063
No	34(18)	155(80)		
Cerebrovascular accident				
Yes	4 (40)	6 (60)	2.68(0.73-9.89)	0.223
No	47 (19.9)	189 (20.1)		
Chronic Kidney disease				
Yes	1(25)	3(75)	1.28(0.13-12.57)	1
No	50(20.7)	192(79.3)		

LAB FINDINGS AND OUTCOME

Bivariate analysis of few lab findings were found to be significant in predicting dead versus alive at 1month as shown in table15. Abnormal white cell counts (leucocytosis/leukopenia), neutrophilia, abnormal renal function (elevated creatinine and urea), abnormal liver function (elevated SGPT levels) and low sodium at admission were found to be significant predictors of mortality at 1 month .

Table 15 Lab findings and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
Leucocytosis				
Yes	36 (28.8)	89 (71.2)	2.83(1.46-5.5)	0.003
No	40 (18.3)	178 (81.7))		
Neutrophilia(>75%)				
Yes	39 (24.8)	118 (75.2)	2.09(1.03-4.25)	0.049
No	12 (13.6)	76 (86.4)		
Platelet count(<50000)				
Yes	3 (17.6)	14 (82.4)	0.83(0.23-3)	1
No	46 (20.5)	178 (79.5)		
SGOT(>115)				
Yes	10 (27)	27 (73)	1.61(0.72-3.6)	0.266
No	38 (18.7)	165 (81.3)		
SGPT(>120)				
Yes	8 (38.1)	13 (61.9)	2.74(1.06-7.05)	0.044
No	40 (18.3)	178 (81.7)		
Creatinine(>1.2)				
Yes	31 (39.2)	48 (60.8)	4.55(2.38-8.73)	<0.001
No	20 (12.4)	141 (87.6)		
Urea(>40)				
>40	24 (36.4)	42 (63.6)	3.06(1.49-6.29)	0.003
No	17 (15.7)	91 (84.3)		
Sodium(<125)				
Yes	17 (33.3)	34 (66.7)	2.34(1.17-4.66)	0.020
No	34 (17.6)	159 (82.4)		

CSF FINDINGS AND OUTCOME

Bivariate analysis of CSF to predict mortality at 1month as shown in table16. CSF findings at admission did not predict mortality at 1 month which was statistically significant.

Table 16 CSF findings and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
CSF Total count				
>5	19 (14.3)	114 (85.7)	0.43(0.19-0.97)	0.047
<5	13(27.7)	34(72.3)		
CSF Neutrophils				
>75	7 (29.2)	17 (70.8)	2.16(0.81-5.74)	0.149
<75	25 (16)	131 (84)		
CSF Protein				
>45	28 (19)	119 (81)	1.41(0.45-4.39)	0.790
<45	4 (14.3)	24 (85.7)		
CSF Glucose				
<45	21 (15.9)	111 (84.1)	0.48(0.21-1.11)	0.102
>45	11 (28.2)	28 (71.8)		

BASELINE MODIFIED RANKIN SCORE,ICU ADMISSION AND OUTCOME

Univariate analysis of baseline modified Rankin score (>2) and requirement of intensive care unit(ICU) admission were found to be significant in predicting mortality at 1month with odds ratio of 14.7 and 3.14 respectively as shown in table17.

Table 17 Baseline mRS ,ICU admission and outcome

	Dead No. (%)	Alive No. (%)	Unadjusted odds ratio (95% CI)	P value
mRS at admission				
>2	12 (75)	4 (25)	14.69 (4.50 - 47.95)	<0.0001
≤2	39 (17)	191 (83)		
ICU admission				
Yes	19(38)	31(62)	3.14(1.56-6.26)	0.002
No	31(16.3)	159(83.7)		

MULTIVARIATE ANALYSIS

Multivariate analysis done to predict independent risk factors to predict diagnosis and outcome is shown in table 18. Only headache and nuchal rigidity were independent risk factors to predict infectious aetiology from non-infectious aetiology.

Low GCS (<8), Intubation at admission, diabetes and mRS ≥ 2 at admission were independent risk factors to predict mortality at one month.

Table 18 Multivariate analysis of diagnostic and outcome predictors

	Odds ratio	95%confidence interval	P value
Diagnosis Prediction			
Headache	3.03	1.46-6.28	0.003
Nuchal rigidity	4.67	2.08-10.46	<0.001
Outcome prediction			
GCS(<8)	4.2	1.8-10.1	0.001
Intubation	2.7	1.07-7.14	0.03
mRS ≥ 2	13.9	3.9-49	<0.001
Diabetes	2.1	1.03-4.45	0.04

SEASONAL VARIATION

Few of the infectious and non-infectious aetiologies were found to have seasonal variation. Figure 25 shows the seasonal variation of infectious aetiology versus non-infectious aetiology –heat stroke which was seen in large numbers in the month of April.

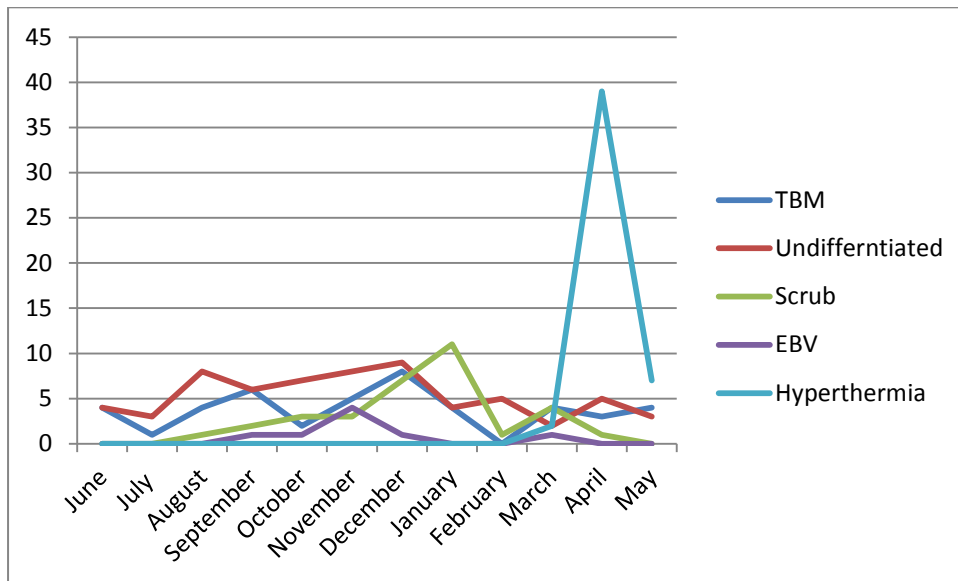


Figure 23 Seasonal variation of various infections and heat stroke

Figure 26 shows the seasonal trend of Epstein Barr virus(EBV) and scrub typhus .Scrub typhus peaked around December and January whereas EBV was seen in November.

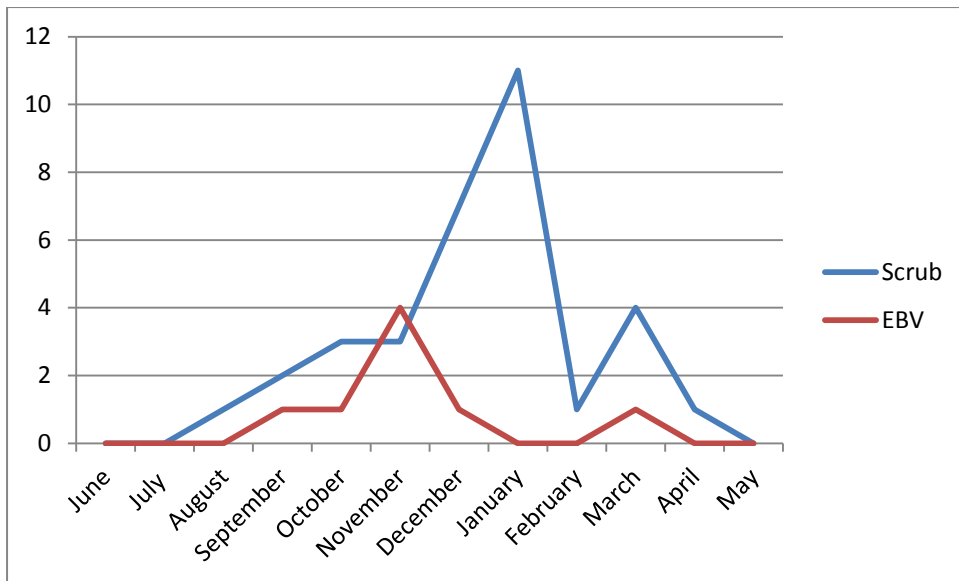


Figure 24 Seasonal variation of Scrub and EBV infection

Figure 27 shows that there was no seasonal variation in the tuberculous meningitis and aseptic meningitis of unknown aetiology which was seen throughout the year.

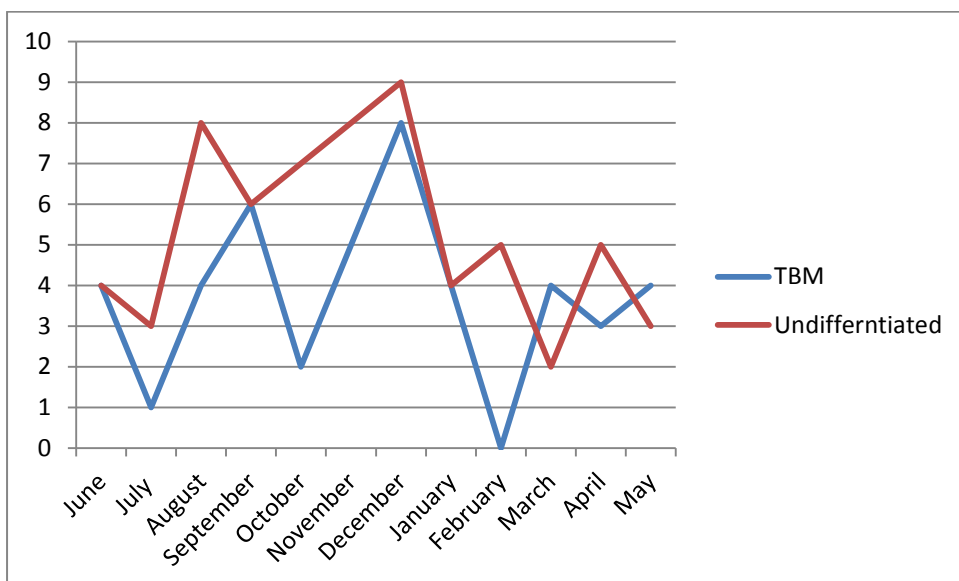


Figure 25 Seasonal variation of tuberculous meningitis and aseptic meningitis of unknown etiology.

DISCUSSION

Acute febrile encephalopathy (AFE) is a common problem encountered by the physicians in the emergency department. The wide spectrum of aetiology that can cause AFE makes this problem challenging for the physicians. Identifying the etiology early and initiating appropriate therapy prevents mortality and reduces the number of patients with long term neurological sequelae.

This study was done primarily to look at the wide spectrum of etiologies that can present as AFE to the emergency department which included both the infectious and the non-infectious etiology. Most of the studies done before on AFE, have looked at the infectious causes alone and have excluded the non-infectious causes(1,2,35,36,71).However few studies have mentioned the data on non-infectious aetiology (34). Our study attempted to look at both the spectrum infectious and non-infectious to understand the proportion of infectious and non-infectious causes and we found that infectious etiology was the predominant cause for this syndrome corresponding to 70 percent. This can help the physicians in the emergency department to keep their differential diagnosis broad when they see patients presenting with this syndrome as 30 percent of them can be non-infectious.

DEMOGRAPHIC DETAILS

The study population included patients from all age group ranging from fifteen to eighty six (15-86). Infectious group were younger compared to the non-infectious group. Though the infectious aetiology can occur in all age group, the non- infectious cause that was predominantly seen in this study was heat stroke which was seen more

in the elderly group. There was no sex difference between the group, however there was slight male predominance which was comparable with other studies in the literature.(1,2,34).There was no significant association we could find between this syndrome and occupation.

From the literature review, there are no previous published studies done on AFE in South India. Most of the studies done were from Central India and North India specifically Uttar Pradesh and Punjab. This is the first study from South India and the study population is predominantly from Tamil Nadu and Andhra Pradesh.

PRIMARY ETIOLOGY.

The primary and the predominant aetiology of acute febrile encephalopathy was infectious (70%).Among the infectious, our study found that primary central nervous system infection was the most common cause which included acute bacterial meningitis (6.4%), scrub meningitis(17.6%), tubercular meningitis((24%), viral meningitis or meningoencephalitis(44%), fungal and protozoal meningitis.

Previous studies in the literature had excluded non-infectious aetiology however most studies(1,2,35,36) have found that primary CNS infection was the most common aetiology. Most studies have found bacterial meningitis as the most common aetiology (1,34,35) however few studies have found viral meningitis more common than bacterial meningitis.(72) This could be attributed to the fact most of the cases of bacterial meningitis are treated at the primary level and only few cases came to our hospital which is a referral centre. Tuberculous meningitis commonly presents as either subacute or chronic meningitis, but we found that a proportion of our

patients(24%) presenting with this syndrome had tuberculous aetiology which was less than 10 % in most other studies.(2,34,35,72) This could be attributed to this being a referral centre and the higher prevalence of tuberculosis in the community.

Viral meningoencephalitis was the most common etiology in this study constituting about 45%(n=82). Majority of them had unknown etiology as compared with other studies(1,2,34,35).A specific etiology could be established only in 9.2%(n=18) and the remaining were unknown. All the patients with this syndrome did not undergo the PCR tests for herpes simplex virus, Adenovirus, Epstein Barr virus, Enterovirus or Varicella-zoster virus due to various reasons, however a major proportion of them had the tests done which could identify aetiology only in 18 patients. Epstein Barr virus was identified in the majority(n=8) which was seen as co infection in 5 patients , 3 with tuberculous meningitis, 1 with scrub typhus and 1 with herpes simplex virus. Five patients had dengue virus encephalitis, 3 had Herpes simplex, 2 had Varicella zoster and 1 had adeno virus.

Sepsis associated encephalopathy though is not a primary CNS infection presented with this syndrome in 7.5 % of patients which was slightly less compared with a few studies which had mentioned sepsis associated encephalopathy as a aetiology(2,35).This could be because we included cases of sepsis associated encephalopathy who were blood culture proven.

The non-infectious aetiology (n=78) was predominantly heat stroke which was seen in 61%(n=48) of the patients in this group. This was seen particularly in the summer season in the month of April and May. Other metabolic and toxin related contributed 39% percent of the patients.

PRIMARY OUTCOME

In our study the mortality was 20.1% at the end of 1 month that is 1 in 5 of them presenting with syndrome die at the end of one month. This indicated the high mortality associated with acute febrile encephalopathy. Previous studies also show similar high mortality and morbidity associated with this syndrome.(1,2,34–36)

The functional outcome assessed in our study show that a significant proportion of the patients have a poor functional outcome at the end of one month indicating a high morbidity caused by this which in turn will have a significant burden on the family and the society.

DIAGNOSTIC PREDICTORS

In our study we also looked at various admission parameters including clinical symptoms, signs, comorbidities, vital status and laboratory parameters both haematological, biochemistry and CSF findings would predict the diagnosis particularly infectious and non-infectious as we know that early diagnosis and prompt treatment can prevent mortality and morbidity. We found in the bivariate analysis that presence of head ache, nuchal rigidity, and papilledema at admission would predict towards an infectious aetiology and similarly absence of altered sensorium in a patient with short duration fever with CNS dysfunction with meningeal signs or symptoms would point towards an infectious cause. Almost all patients in the non-infectious group had altered sensorium. Multivariate analysis done to look for independent factors predicting diagnosis as infectious and non-infectious we found head ache and nuchal rigidity as independent predictors for an infectious etiology.

OUTCOME PREDICTORS

In our study we also looked at various admission parameters including clinical symptoms, signs, comorbidities, vitals and laboratory parameters both haematological, biochemistry and CSF findings and baseline modified Rankin score would predict the outcome. We found in our bivariate analysis presence of head ache had better outcome. This could be explained by the fact patients with head ache have a treatable infectious cause. ICU admission, low GCS(<8), requiring intubation at admission, poor modified Rankin score at admission (mRS>2) predicted poor outcome at one month. Presence of comorbidities specifically diabetes mellitus had a higher mortality at one month. Renal dysfunction and low sodium also predicted poor outcome. Multivariate analysis done to look for independent factors predicting outcome at presentation we found low GCS, need for intubation at admission and presence of diabetes and a modified Rankin score of >2 at admission were independent risk factors for mortality at 1 month.

SEASONAL TREND

We also found in our study a seasonal trend among few infections and non-infectious cases. Scrub meningitis was seen predominantly in the month of December and January. Heat stroke was predominantly seen during the summer months of April and May. Rest of them were seen throughout the year.

LIMITATION

There were few limitations to this study. Firstly all patients who were included in this study were the ones with access to healthcare at a tertiary medical centre or were referred to a tertiary centre which may lead to a referral bias. The findings of this study are therefore not representative of the prevalence of etiologies of AFE in the community. Secondly Polymerase chain reaction (PCR) could not be done for all patients with suspected viral encephalitis as this was limited by cost. We also do not having tests for all virus causing encephalitis by PCR. Thirdly few patients about 10 percent were lost to follow up at one month.

CONCLUSION

Acute febrile encephalopathy is a challenging clinical entity for the physicians in the emergency department because of the wide spectrum of aetiology causing it and the high mortality and morbidity associated with it. In this study we attempted to look at the entire spectrum of patients presenting with AFE including both the infectious and non-infectious, identify the primary aetiology and their outcome which included mortality and functional outcome. We found that the demographic details of all the patients is of paramount importance because locating their geographical location and considering aetiologies specific to that location will help in earlier diagnosis and initiating early empiric therapy that will prevent mortality and morbidity. Detailed

history taking and examination will help identify symptoms and signs that can predict diagnosis and outcome. In our study we found that head ache, papilledema and nuchal rigidity predicted towards an infectious aetiology and low GCS, requirement of intubation at admission, diabetes and a high modified Rankin score of >2 at admission were independent predictors of mortality at one month .It is therefore imperative for the clinician to keep the differentials broad when such a patient presents to the emergency department to initiate empiric therapy appropriately and look for predictors to assess diagnosis and outcome. We found that few infectious and non-infectious causes particularly scrub typhus and heat stroke had a seasonal trend and hence understanding them helps in early diagnosis. The high mortality and morbidity associated with this syndrome makes it more challenging and also warrants more research to identify the aetiology as many cases we found remained undiagnosed.

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ANNEXURES

ANNEXURE 1 (PATIENT INFORMATION SHEET)

PATIENT INFORMATION SHEET

You have been hospitalized for evaluation of fever with changes in consciousness and hence have been requested to participate in this study. The sickness with which you are admitted is a very common cause of presentation to hospital in the emergency department. The usual causes are infection of the brain due to bacteria, virus or fungus. The other reasons are malaria, scrub typhus, dengue, leptospirosis, typhoid and many others. Identifying the cause early can help in starting treatment early so as to improve the outcome.

.This study is aimed at identifying the cause of each disease so that we can diagnose disease and initiate treatment early. The information from this study will help other doctors in Vellore to make the right diagnosis and hence choose the correct treatment. In this study all patients presenting with short duration fever and altered sensorium will be managed as per the treating physician .The outcome of the disease will be assessed using a grading system by the investigator through a questionnaire. If you are willing to participate in this study, you may be asked to review 1 month after your initial visit for a reassessment of your functional status otherwise you will be interviewed through the telephone.

By participating in the study you will not be made to incur any added expenses apart from the routine initial investigations. There is no added risk or discomfort of any kind for you by participating in this study. Any personal information about you that is collected as part of this study will be maintained strictly confidential. Participation is

entirely voluntary and refusal to participate will not involve any loss of benefit or change in treatment that you receive.

For trial related queries, the principal investigator Dr S.B Manoj Job to be contacted.

Dr.S.B Manoj Job, **E mail: drmanojjob@gmail.com**
Dept of Medicine III, **Ph: 9489663692**
CMC, Vellore

ANNEXURE 2 (CONSENT FORM)

CONSENT FORM

Study Number: _____

Subject's Initials: _____ Subject's Name: _____

Date of Birth / Age: _____

- (i) I confirm that I have read and understood the information sheet dated _____ for the above study and have had the opportunity to ask questions. []
- (ii) I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. []
- (iii) I understand that the Sponsor of the clinical trial, others working on the Sponsor's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However, I understand that my identity will not be revealed in any information released to third parties or published. []
- (iv) I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s). []
- (v) I agree to take part in the above study. []

Name of the study participant / signatory: _____

Signature / Thumb impression:



Date: ____/____/____

Investigator's signature:



Date: ____/____/____

Name of witness: _____

Witness signature:



Date: ____/____/____

ANNEXURE 3 (CLINICAL RESEARCH FORM)

CLINICAL RESEARCH FORM

Clinical spectrum, diagnostic and outcome predictors of acute febrile encephalopathy in a tertiary hospital in south India

Name:	Age					
State	TN	AP	WB	Sex	Male	Female
Hospital No.						
Occupation						
Contact No.						

Symptoms and signs

Fever	Yes	No	Vomiting	Yes	No
Altered Sensorium	Yes	No	Nausea	Yes	No
Lethargy	Yes	No	Photophobia	Yes	No
Extreme irritability	Yes	No	Papilledema	Yes	No
Change in behaviour	Yes	No	Cranial nerve palsies	Yes	No
Nuchal rigidity	Yes	No	Ataxia	Yes	No
Headache	Yes	No	LOC	Yes	No
Focal neurologic deficits	Yes	No		Yes	No
Seizures	Yes	No	GCS	E	M
Focal	Yes	No			
Generalised	Yes	No			
Intubation	Yes	No			
			Pedal edema	Yes	No
Cough	Yes	No	Respiratory crackles	Yes	No
Chest pain	Yes	No	Hepatomegaly	Yes	No
Dyspnea	Yes	No	Splenomegaly	Yes	No
Dysuria	Yes	No	RR		Others specify
Burning micturition	Yes	No	PR		
Increased frequency	Yes	No	BP		
Renal angle tenderness	Yes	No	SpO2		
			Temp		

Comorbidities

Diabetes	Yes	No	HIV	Yes	No
Hypertension	Yes	No	Malignancy	Yes	No
CKD	Yes	No	CVA	Yes	No
CLD	Yes	No	CTD	Yes	No
IHD	Yes	No			

SEROLOGY

Drug History	Yes	No	Scrub	Pos	Neg	
			Leptospirosis	Pos	Neg	
			Dengue	Pos	Neg	
Toxin exposure	Yes	No	Blood culture	Pos	Neg	
			Widal	Pos	Neg	
Alcohol	Yes	No	JE	Pos	Neg	
			HSV	Pos	Neg	
			Measles	Pos	Neg	

LAB INVESTIGATIONS

COUNTS			BIOCHEMISTRY		
TC			Sodium		
Neutrophil			Potassium		
Lymphocyte			Calcium		
Left shift			Phosphorus		
Platelets			Magnesium		
Malarial parasite	Pos	Neg	Glucose		
TB	DB	SGOT	SGPT	ALK PHOS	
PT			Creatinine		
INR			Urea		
APTT			Lactate		
CRP			PaO2	FiO2	P/F
Procalcitonin			PCO2		
HIV	Pos	Neg	VDRL	Pos	Neg

CSF Findings

Total count		Opening pressure	
Neutrophil		CSF protein	
Lymphocyte		CSF gram stain	
CSF glucose		Blood glucose	
Multiplex PCR			
Culture			

RADIOLOGICAL INVESTIGATIONS

Xray	
CT brain	
USG	
MRI brain	


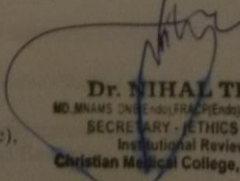
Admitted in ward	Yes	No	Antibiotics	Yes	No
No of days			If yes,Name		
Admitted in ICU	Yes	No	Duration		days
No of days			Acyclovir	Yes	No
Ionotropes used	Yes	No	ATT	Yes	No
No of days			Steroids	Yes	No
Invasive ventilation	Yes	No	Anti epileptics	Yes	No
No. of days					
Ventilator free days					
Other organ dysfunction	Yes	No	HAI	Yes	No
Type of dysfunction			Type of HAI		

Outcome

	Premorbid mRS At admission	At discharge		At 1 month	
mRS					
Vital status	DAMA	Alive	Dead	Alive	dead

FINAL DIAGNOSIS: 1

ANNEXURE 4 (IRB APPROVAL FORM)

 OFFICE OF RESEARCH INSTITUTIONAL REVIEW BOARD (IRB) CHRISTIAN MEDICAL COLLEGE, VELLORE, INDIA.	
Dr. B.J. Prashantham, M.A., M.A., Dr. Min (Clinical) Director, Christian Counseling Center, Chairperson, Ethics Committee.	Dr. Alfred Job Daniel, D Ortho, MS Ortho, DNB Ortho Chairperson, Research Committee & Principal Dr. Nihal Thomas, MD., MNAMS., DNB (Endo), FRACP (Endo), FRCP (Edin), FRCP (Glas) Deputy Chairperson Secretary, Ethics Committee, IRB Additional Vice Principal (Research)
July 24, 2015	
Dr. S. B Manoj Job PG Registrar Department of Medicine Christian Medical College, Vellore 632 004	
Sub: Fluid Research Grant NEW PROPOSAL: Clinical Spectrum, diagnostic and outcome predictors of acute febrile encephalopathy in a tertiary hospital in south India. Dr. S.B. Manoj Job, Emp. No: 29130, Medicine, Dr. Sudha Jasmine, Emp. No: 28296, Dr. Sowmya Emp. No: 28184, Dr. L. Ramya Emp. No: 31571, Dr. Anand Zachariah, Emp. No: 1179, Dr. K.P.P. Abhilash, Emp. No: 28585, Dr. Turaka Vijay Prakash, Emp. No: 28591, Dr. Binila Chacko, Emp. No: 28471, Dr. Ronald Albert Benton Carey, Emp. No: 28700, Medicine, Dr. Prasanna, Emp. No: 31654, Biostatistics.	
Ref: IRB Min No: 9450 [OBSERVE] dated 05.06.2015	
Dear Dr. S. B Manoj Job,	
I enclose the following documents:-	
1. Institutional Review Board approval 2. Agreement	
Could you please sign the agreement and send it to Dr. Nihal Thomas, Addl. Vice Principal (Research), so that the grant money can be released.	
With best wishes,	
Dr. Nihal Thomas Secretary (Ethics Committee), Institutional Review Board	 Dr. NIHAL THOMAS MD, MNAMS, DNB (Endo), FRACP (Endo), FRCP (Edin), FRCP (Glas) SECRETARY - (ETHICS COMMITTEE) Institutional Review Board, Christian Medical College, Vellore - 632 002.
Cc: Dr. Sudha Jasmine, Dept. of Medicine, CMC, Vellore.	1 of 5
Ethics Committee Blue, Office of Research, 1st Floor, Carman Block, Christian Medical College, Vellore, Tamil Nadu 632 002. Tel : 0416 - 2284294, 2284202 Fax : 0416 - 2262788, 2284481 E-mail : research@cmcvellore.ac.in	

Data sheet

AGE	STATE	SEX	OCCUP	OCCUPATI	PHONE	FEVER	SENSOR	LATHARI	IRRITAB	BEHAVIO	NUCHAL	HEADAO	FOCALN	SEIZURE	FOCAL	GENERA	INTUBA	COUGH	CHESTP	DYSPPNE	DYSURIA	BURNIN	FREQUE	RENAL	VOMITIN
23	1	1	2	student	9566536478	1	1	2	2	2	1	1	2	1	2	1	2	2	2	2	2	2	2	2	1
17	1	1	2	student		1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
26	2	2	5	housewife	9492070830	1	1	2	2	2	2	1	2	1	2	1	2	2	2	2	2	2	2	2	1
55	1	2	5	housewife	9042391931	1	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1
30	1	1	3	Manual labourer	9787423282	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
73	2	1	0			1	1	2	2	2	1	1	2	2	2	2	1	2	2	2	2	2	2	2	1
76	1	1	3	Manual labour		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
75	2	1	3	manual labourer	837489912	1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
54	1	1	0			1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
23	1	1	2	student		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
35	1	2	5	Housewife	9786187195	1	1	1	2	2	2	2	2	1	2	2	1	2	2	2	2	2	2	2	2
29	1	2	5	housewife		1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
24	1	2	5	housewife	9786957096	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
68	1	2	5	HOUSEWIFE		1	1	2	2	2	1	1	2	2	2	2	2	1	2	2	2	2	2	2	2
60	1	1	3	labourer	7373992777	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
40	2	2	5	Housewife	8886102201	1	1	2	2	2	1	1	2	1	2	1	1	2	2	2	2	2	2	2	1
61	1	1	0		9944963172	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
55	1	1	0			1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2
40	2	1	3	Manual labourer	9704225191	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
60	1	1	3	manual labourer	9940853402	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
70	1	2	5	housewife	9443478748	1	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2
23	1	2	5	housewife	9751096337	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
32	1	1	3	manual labourer	9985917208	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
22	1	1	2	student	9790281546	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
45	1	2	5	housewife	9843088525	1	1	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2
38	1	1	3	manual labourer	9655824490	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
73	1	1	3	Manual labourer	9443336736	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
17	1	2	2	student	9710753099	1	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	1
35	2	2	5	housewife	996816427	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
30	2	2	5	house wife	7730959695	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
31	1	2	5	housewife	7730959695	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
86	1	1	3	manual labourer	9585018298	1	1	2	2	2	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2
23	2	1	2	student	9505517082	1	1	2	2	2	2	2	1	2	1	2	1	2	2	2	2	2	2	2	1
25	2	2	5	housewife	9944909859	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
25	1	2	5	housewife	9944909859	1	2	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1
28	1	1	3	manual labourer	9944266815	1	1	2	2	2	2	1	2	1	2	1	2	2	2	2	2	2	2	2	1
52	2	1	3	Manual labourer	9848454270	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
25	1	1	2	student	9789612586	1	1	2	2	2	1	1	2	1	3	1	1	2	2	2	2	2	2	2	1
25	2	1	2	student	988538692	1	1	1	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1
45	1	2	5	housewife	8.60484E+11	1	1	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2
68	1	2	5	housewife	9444030028	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
26	2	2	5	housewife	9885757279	1	1	1	1	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
72	1	1	3	Manual labourer	9003991299	1	1	2	2	2	2	2	2	1	2	1	2	2	2	2	2	2	2	2	2
79	1	1	3	manual labourer	9440480008	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
71	1	1	3	manual labourer	9944446604	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
31	2	1	3	Manual labour	9581906365	1	1	2	2	2	2	1	2	1	2	1	2	2	2	2	2	2	2	2	1
50	2	1	0		9986340077	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
46	2	1	3	manual labourer	9490725939	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
62	1	1	3	Manual labourer	9442412160	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1
25	2	2	5	housewife	8105850074	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1
78	1	2	5	housewife		1	1	2	2	2	2	2	1	1	2	1	2	2	2	2	2	2	2	2	2
60	1	1	3	manual labourer	9626490937	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
71	1	2	5	housewife		1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
52	1	2	5	housewife	8124900653	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
56	1	2	5	housewife		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
55	1	1	8	BSNL officer	9790522733	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
51	1	1	3	Manual labourer	9003492992	1	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	2
75	1	1	7	farmer	9994051947	1	1	2	2	2	2	2	2	1	2	1	1	2	2	2	2	2	2	2	2
62	1	2	0		9962987607	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
52	1	1	3	manual labourer	9940463977	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
70	1	2	5	housewife		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
67	1	1	3	manual labourer	9944804557	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
53	2	2	5	housewife	9177141090	1	1	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
15	2	1	2	Student	9701234158	1	1	2	2	2	2	1	1	2	1	2	1	2	2	2	2	2	2	2	1
20	1	2	2	Student	8903687436	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
51	1	1	5	housewife	7845407088	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	1	2	2	student	9585195039	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
37	1	1	7	farmer	9943653932	1	1	2	2	1	2	2	2	1	2	1	1	2	2	2	2	2	2	2	1
59	1	1	3	manual labourer		1	1	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2
35	2	1	3	manual labourer	9849341483	1	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1
23	1	2	2	student	9443247989	1	1	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
82	1	2	5	housewife	9362687881	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
16	2	1	2	student	849992350																				

NAUSEA	PHOTO	PAPILLE	CRANIA	ATAXIA	LOC	GCSE	GCSM	GCSV	TOTALG	PEDAL	CRACKL	HEPATO	SPLENO	ORR	PR	BPSYS	BP DIA	SPO2	TEMP	OTHERS	OTHERS	DIABETE	HYPER	CKD	CLD	IHD	HIV	
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	26	116	100	60	96	103.00	traumatic		2	2	2	2	2	2
2	2	2	1	2	2	2	4	6	4	14	2	2	2	2	20	126	120	60	96	95.50			2	2	2	2	2	2
2	2	2	2	2	2	2	2	5	2	9	2	2	2	2	24	76	100	60	100	97.80			2	2	2	2	2	2
2	2	2	2	2	2	2	2	5	2	9	2	2	2	2	20	118	120	80	94	98.00			1	1	2	2	2	2
2	2	2	1	2	2	2	4	6	5	15	2	2	2	2	18	72	110	60	98	96.60			2	2	2	2	2	1
2	2	2	2	2	2	2	1	3	1	5	2	2	2	2	32	124	150	80	93			1	1	2	2	2	2	
2	2	2	2	2	2	2	4	6	4	14	2	1	2	2	58	100	190	100	94	104.00			1	1	2	2	2	2
2	2	2	2	2	2	2	4	5	4	13	2	2	2	2	28	118	100	60	93	100.80	Psychiatr		2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	1	2	2	36	104	160	90	98	104.50			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	20	121	120	80	96	101.00	retroorbit		2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	0	9	2	2	2	2	20	124	110	70	98	97.00			2	2	2	2	2	2
2	2	2	1	2	2	2	4	6	5	15	2	2	2	2	18	88	80	60	100	99.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	2	11	2	2	2	2	30	148	100	60	99	100.00			2	2	2	2	2	2
1	2	2	2	2	2	2	4	5	4	13	2	2	2	2	26	84	170	80	92	100.00			2	1	2	2	2	2
2	2	2	2	2	2	2	4	6	3	13	2	2	2	2	88	90	60	60	93	98.40			2	2	2	2	2	2
2	2	2	1	2	2	2	1	2	5	3	10	2	2	2	20	78	110	70	97				2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	28	92	130	80	99	103.40	Seizure c	Psychiatr		2	2	2	2	2
2	2	2	2	2	2	2	3	4	1	8	2	2	2	2	46	126	120	80	90		GRBS 33		1	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	36	82	100	80	96	98.90			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	34	134	100	60	92	97.60			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	0	9	2	2	2	2	22	108	120	80	99	99.00			2	1	2	2	2	2
2	2	2	2	2	2	2	3	6	5	14	2	2	2	2	20	102	130	90	99	97.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	24	105	120	70	97	96.50			2	2	2	2	2	2
2	2	2	2	2	2	2	1	5	2	8	2	2	2	2	44	154	100	70	80	98.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	36	981	100	70	99	98.60			1	1	2	2	2	2
2	2	2	2	2	2	2	4	5	4	13	1	1	1	1	34	102	130	80	89	99.00	jaundice	eschar at	2	2	2	2	2	2
2	2	2	2	2	2	2	3	5	2	10	2	2	2	2	34	102	140	70	95	98.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	26	86	90	60	96	97.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	22	84	100	60	98	96.00	Eschar le		2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	24	130	100	60	97	100.60			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	24	130	100	60	97	100.60			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	3	12	2	1	2	2	20	88	110	70	94	101.00			2	2	2	2	2	2
2	2	2	2	2	2	2	1	5	2	8	2	2	2	2	28	104	100	70	94	101.00	skin lesio		2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	22	90	100	60	100	99.40			2	2	2	2	2	2
1	2	2	2	2	2	2	4	6	5	15	2	2	2	2	22	100	100	60	100				2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	20	102	90	60	98	100.00			2	2	2	2	2	2
2	2	2	2	2	2	2	3	5	2	10	2	2	2	2	34	142	160	100	98	103.40			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	1	10	2	1	2	2	34	136	140	80	94	103.00			2	2	2	2	2	2
2	2	2	2	2	2	2	3	5	3	11	2	2	2	2	30	142	140	60	95	103.20			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	20	88	120	80	98	99.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	22	126	90	50	95	100.40			1	2	2	2	2	2
2	2	2	2	2	2	2	2	5	2	9	2	2	2	2	24	78	100	80	98	100.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	3	12	2	2	2	2	24	120	120	80	79	99.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	32	124	110	70	97	99.00			1	1	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	26	130	90	60	93	100.00			1	1	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	24	98	100	60	96				2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	30	126	90	60	98	103.00	Lower lim	Eschar le	2	2	2	2	2	2
2	2	2	2	2	2	2	1	5	2	8	2	2	2	2	40	114	128	80	84	101.00			2	2	2	2	2	2
2	2	2	2	2	2	2	3	6	3	12	2	2	2	2	24	104	120	70	95	98.30			1	2	2	2	1	2
2	2	2	2	2	2	2	4	6	5	15	2	2	2	2	24	72	110	70	99	100.00	Double v		2	2	2	2	2	2
2	2	2	2	2	2	2	1	4	2	7	2	2	2	2	22	96	100	60	88	101.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	4	13	2	2	2	2	40	118	110	80	91	101.40	diarrhea		2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	24	92	220	100	99	99.00			1	1	2	2	2	2
2	2	2	2	2	2	2	1	3	6	4	13	2	2	2	36	90	130	80	98	103.00	cpk - 250		2	1	2	2	2	2
2	2	2	2	2	2	2	4	5	4	13	2	2	2	2	26	122	110	70	93	103.60	cpk - 127		2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	32	120	120	80	89	100.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	1	2	2	44	146	100	60	99	105.00			1	1	2	2	2	2
2	2	2	2	2	2	2	1	1	3	2	2	2	2	2	24	120	90	50	48	107.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	20	148	150	80	96	105.00	Tubercu		1	1	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	24	110	90	60	96		anuria, at		1	1	2	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	24	80	110	70	106	102.00	cpk - 275		2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	3	12	2	2	2	2	34	114	130	80	93	103.60			1	2	1	2	2	2
2	2	2	2	2	2	2	4	6	4	14	2	2	2	2	24	116	100	70	99	100.00			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	1	10	2	2	2	2	20	98	100	60	100	97.80			2	2	2	2	2	2
2	2	2	2	2	2	2	4	5	4	13	2	2	2	2	22	108	100	60	96	99.00								

MALIG	CVA	CTD	DRUG	DRUGY	TOXIN	TOXIN	ALCOH	SCRUB	LEPTO	DENGUE	BLDCL	BCPOS	WIDAL	JE	HSV	MEASLE	WBC	URINECI	URINEP	TC	NEUTRO	LYMPH	PHQ	LEFTSH	PLATEL	MALARI	TB	DB	SGOT
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		3		14,500	90	7	1	429,000	2	0.60	0.20	32	
2	2	2	2		2		2	3	3	3	3		3	3	3	3				29,900	93	4	1	252,000	2	0.70	0.30	19	
2	2	2	2	2	2	2	2	2	3	2	2		3	3	3	3				8,400	63	29	2	94,000	2	0.54	0.24	32	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				11,500	66	17	2	300,000	3	0.70	0.20	35	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				11,300	82	6	1	505,000	3	0.40	0.30	10	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				17,200	85	6	1	270,000	2	1.10	0.50	37	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		2		9,600	89	3	1	124,000	3	0.90	0.40	17	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				10,800	77	14	2		3	1.40	0.10	115	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				12,200	70	19	2	186,000	2	1.80	0.60	83	
2	2	2	2	2	2	2	2	2	3	2	2		3	3	3	3				13,100	77	10	2	333,000	2	0.50	0.10	19	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				16,100	91	4	1	167,000	2	0.50	0.30	136	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				7,700	66	23	2	204,000	3	0.29	0.10	22	
2	2	2	2	2	2	2	2	2	2	2	2		3	3	3	3				10,300	70	24	2	25,300	2	0.60	0.20	69	
2	2	2	2	2	2	2	2	2	3	3	2		3	3	3	3				14,900	77	16	2	196,000	2	1.00	0.20	45	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				10,000	69	23	2	217,000	2	0.25	0.10	34	
2	2	2	2	2	2	2	2	2	3	3	2		3	3	3	3				19,500	83	11	1	261,000	2	0.50	0.10	23	
2	2	2	2	2	2	2	2	2	3	2	2		3	3	3	3				7,600	81	10	2	111,000	2	0.40	0.20	43	
2	2	2	2	2	2	2	2	3	3	3	1 ESBL		3	3	3	3				1,300	21	4	2	8,000	2	3.20	1.50	62	
2	2	2	2	2	2	2	2	1	3	2	2		3	3	3	3				10,800	76	2	1	126,000	2	0.70	0.30	60	
2	2	2	2	2	2	2	2	1	2	2	3		3	3	3	3				15,500	77	17	2	103,000	2	0.98	0.50	205	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				6,300	69	22	2	333,000	3	0.66	0.21	32	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				9,800	79	18	2	236,000	2	0.80	0.30	75	
2	2	2	2	2	2	2	2	1	2	3	3		3	3	3	3				9,300	71	22	2	358,000	3	0.60	0.30	60	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				12,100	74	21	2	145,000	2	2.80	2.50	129	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				5,700	77	17	2	111,000	3	0.90	0.10	23	
2	2	2	2	2	2	2	2	1	2	3	3		3	3	3	3		3		10,800	61	35	2	26,000	2	6.35	5.42	160	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				11,000	85	6	1	169,000	2	1.20	0.30	27	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				18,300	92	4	1		2	1.00	0.30	31	
2	2	2	2	2	2	2	2	1	3	3	3		3	3	3	3				4,700	68	23	2	166,000	2	0.60	0.20	21	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		3		14,900	76	14	2	308,000	3	0.50	0.10	11	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				14,900	76	14	2	308,000	3	0.50	0.10	11	
2	2	2	2	2	2	2	2	2	2	2	2		3	3	3	3				7,600	91	5	1	104,000	2			171	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				12,500	69	24	2	161,000	2	1.22	0.39	107	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				10,000	27	66	2	232,000	2	0.20	0.10	49	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				10,000	27	66	2	232,000	2	0.20	0.10	99	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				10,200	73	18	2	240,000	2	1.90	1.30	85	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				14,100	80	17	2	31,000	2	1.00	0.30	139	
2	2	2	2	2	2	2	2	1	3	1	2		3	3	3	3		3		10,200	73	18	1	240,000	2	1.90	1.30	85	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		3		18,900	84	8	1	185,000	2	1.30	0.40	45	
2	2	2	2	2	2	2	2	2	3	3	2		3	3	3	3				7,900	60	27	2	273,000	2	0.80	0.10	18	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				15,200	73	21	2	111,000	2	2.40	2.10	46	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				7,800	69	21	2	201,000	2	1.00	0.50	36	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				19,600	80	11	2	200,000	3	0.40	0.20	66	
2	2	2	2	2	2	2	2	3	3	3	1		3	3	3	3		49		10,400	80	15	2	211,000	2	0.60	0.38	51	
2	1	2	2	2	2	2	2	2	2	2	2		3	3	3	3				16,000	70	22	2	136,000	3	0.90	0.37	111	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				14,300	26	65	2	184,000	2	0.50	0.20	99	
2	2	2	2	2	2	2	2	1	2	2	3		3	3	3	3				8,300	71	21	2	5,000	2	0.60	0.40	151	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				26,500	81	12	2	84,000	2	0.70	0.30	57	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				4,100	55	33	2	139,000	2	0.50	0.20	7	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				10,100	89	7	1	492,000	2	0.60	0.22	12	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		3		19,500	94	4	1	247,000	3	0.60	0.20	20	
2	2	2	2	2	2	2	2	1	2	2	2		3	3	3	3				12,300	69	28	2	102,000	2	2.60	2.40	93	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				11,300	80	13	2	346,000	3	0.40	0.10	22	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				14,900	89	7	1	277,000	3	0.80	0.30	38	
2	2	2	2	2	2	2	2	2	3	3	2		3	3	3	3				1,200	83	12	2	280,000	2	0.80	0.30	39	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				10,700	79	12	2	140,000	2	2.50	0.90	548	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				24,800	89	7	1	464,000	2	3.00	0.70	84	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				9,700	72	16	1	227,000	2	0.60	0.20	18	
2	2	2	2	2	2	2	2	3	3	3	3		3	3	3	3				7,300	75	18	2	131,000	3	1.00	0.30	96	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3		2		20,900	78	12	2	321,000	3	0.60	0.10	13	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				11,000	76	13	2	158,000	3	0.80	0.30	60	
2	2	2	2	2	2	2	2	3	3	3	2		3	3	3	3				20,200	92	4	1	251,000	2	1.00	0.50	24	
2	2	2	2	2	2	2	2	2	3	3	2		3	3	3	3				10,500	78	17	2	17,400	2	1.00	0.60	42	
2	2	2	2	2	2	2	2	1	3	3	2		3	3	3	3				32,100	92	4	1						

SGPT	ALP	PHOS	PT	INR	APTT	CRP	PROCAL	HIV1	SODIUM	POTASS	CALCIUM	PHOSPH	MAGNES	CREATIN	UREA	LACTAT	PAO2	FIO2	PF	PCO2	VDRL	TOTAL	NEUTRO	LYMPH	CSFGLU	GLU	GLUCOS	GLU	BLDGLU	
62	123							3	128	4.60				0.53	13	0.90	115	21	548	20		8,000	90	10	2.00	75.33	113	-73.33	113	
10	123							2	136	4.20				0.63	23						3	5,280	98	2	52.00					
32	110							2	134	4.20				0.58		1.10						5	15	85	88.00	102.00	153	-14.00	153	
27	88							2	134	4.30	9.15	3.80	1.85	0.86	48						3	3	0	100	78.00	78.67	118	-0.67	118	
8	389							1	129	4.10				1.50	92						3	60	34	60	21.00	70.67	106	-49.67	106	
17	79	11.90	1.10	33.60					131	2.50				1.16	16	11.30	72			11		2,100	96	2	29.00	198.00	297	-169.00	297	
10	65								122	3.50				2.05	57	1.70	67	21	319	28									129	
24	33							3	155	3.90	8.04	3.50		3.33	81						3						77.33	116		116
37	58								100	3.50	7.50	1.90		1.10		2.00	95			18						106.00	159		159	
20	90				4.31			2	138	3.40	9.38	3.70		0.94								80	3	97	56.00					
65	98								136	2.90				1.02	26							7	1	8	81.00	79.33	119	1.67	119	
18	48							2	132	3.80	8.60	3.50		0.44							2									
25	62	11.90	1.11	44.30				2	155	3.50						1.10					2	20	36	58	95.00	93.33	140	1.67	140	
32	105							3	139	3.70				0.79	42						3	60	10	90	53.00	64.00	96	-11.00	96	
7	188								128	3.70				0.94	49	2.00	70	21	333	29		40	10	89	143.00	258.67	388	-115.67	388	
9	109	11.30	1.05	30.60				3	140	3.90	8.20	2.40	1.83	0.66	22	0.90	158	21	752	37	3	580	35	42	56.00	82.67	124	-26.67	124	
13	44								123	3.50				0.64	13							15	8	68	72.00					122
45	110	11.40	1.06	26.40													86	100	86	17									332	
94	122							3	134	3.60				0.78	38						3	110	5	95	52.00	74.67	112	-22.67	112	
87	42							2	131	4.00	7.10	2.30		1.29	89						3	8	22	64	37.00	90.67	136	-53.67	136	
42	109							3	110	3.90				0.37	10	0.70	84	21	400	38	3					85.33	128			
60	92							2	133	3.30				0.57	21						3	120	19	76	46.00	72.00	108	-26.00	108	
87	295							2	132	3.90				0.58								30	2	98	65.00	66.67	100	-1.67	100	
128	148							2	135	3.90	8.80	3.80		1.09	25	0.70	74	21	352	43	3					113.33	170			
10	66							3	128	3.10	11.20	3.60	0.97	1.00		1.00	103	21	490	34	3	3	0	100	110.00	337.33	506	-227.33	250	
68	220	11.40	1.05	41.50				3	138	4.40				2.60	151	2.40	89	21	424	21	3									
11	51							2	138	4.10	8.52	2.70		1.58	51						3	10	44	48	65.00	43.33	65	21.67	65	
9	71							3	130	3.80				0.63							3	12	42	54	5.00	70.00	105	-65.00	105	
11	59							2	133	3.90				0.68	13						3	190	5	92	11.00	54.67	82	-43.67	82	
4	63				4.67			2	129	4.00	9.00	2.50		0.53	16						3	94	72	25	31.00	66.67	100	-35.67	100	
4	63							2	129	4.00				0.53	16						3	94	72	35	31.00	146.67	220	-115.67	220	
64								3	138	4.30	7.54	5.00	2.57	4.46	193	1.70	82	21		30	3					64.67	97		97	
39	76	10.70	0.99	41.80				2	133	4.70	7.50	2.10	1.72	0.89		1.30	300	40	750	35	3					72.67	109		109	
49	122	10.40	0.96	41.50				3	136	3.90				0.63	11															
49	122	10.40	0.96	41.50				2	132	4.10				0.54							3									
116	122	12.10	1.12	34.00				2	135	3.90	8.48	3.30	2.94	0.74	39											75.33	113		113	
39	34	14.10	1.30	63.80				2	134	3.80		4.70	2.00	0.68	65	5.40	96	21	457	27	3									
116	122	12.10	1.12	34.00				2	135	3.90				0.74	39						3					134.67	202		202	
12	117							2	131	3.60			2.26	1.03	24						3	380	83	14	64.00	70.67	106	-6.67	106	
18	61							2	135	3.70	8.10	3.60	1.64								3	3	30	60	73.00	102.00	153	-29.00	155	
32	431							2	128	4.50	8.05	2.90		1.09	51	1.40	66	21	314	27	3	8	2	98	99.00	155.33	233	-56.33	233	
37	73							2	137	38.00				0.50	15						3	60	10	85	55.00	67.33	101	-12.33	101	
35	60	12.20	1.13	52.20				3	135	4.60				2.10	54	2.10	73	45	162	28	3	0	100	151.00	146.00	219	5.00	219		
22	102	12.90		34.10			3.80	3	137	4.40			1.98	2.63	124	2.20	66	21		28	3	12	32	62	101.00	208.00	312	-107.00	312	
61	44							3	142	4.00				2.50	75	2.20	64	21	305	27	3					99.33	149			
98	135							2	133	4.00				1.33	44							36	6	89	48.00	76.00	114	-28.00	114	
30	192	14.10	1.30	62.50				2	126	4.30				0.96	54							6	60	30	33.00					
47	188	10.90	1.01	39.10				2	128	4.10				0.73	44	1.10	79	21	376	31	3	100	5	93	75.00	77.33	116	-2.33	116	
27	91							3	129	3.70				0.91							3	1,750	2	78	54.00	100.00	150	-46.00	150	
10	77								125	3.90				0.47	20							170	19	75	15.00	93.33	140	-78.33	140	
10	34							3	102	3.00	7.93	2.10	2.04	0.63	85	4.70						250	1	91	29.00	100.00	150	-71.00	150	
50	205	11.30	1.05	57.90				2	136	4.30		6.40	2.32	3.51	147	0.70	100	45	222	18	3	10	18	82	79.00	42.67	64	36.33	64	
18	98							2	125	4.60	9.64	1.60		0.63	24	0.90	61	100	61	29	1	200	29	69	52.00					
13	72							3	109	3.30				0.69	16											94.00	141		141	
11	65							3	117	4.10				0.93		0.90	66	21	314	22						93.33	140		140	
251	45	11.90	1.10	29.70				2	119	3.50				1.17	24						3						99.33	149		149
49	52	11.40	1.05	36.00				3	111	4.00			1.78	1.08	17	12.80	143	100	143	17	3					289.33	434		434	
10	95	12.70	1.17	42.40				2	127	4.60	7.17	3.50	1.48	2.16												133.33	200		200	
28	60	10.50	0.97	33.60					135	3.80				1.07	47												217.33	326		326
13	69	10.50	0.97	34.50				2	136	8.30		4.70	1.81	9.48	127	11.70	141	21	671	12						38.67	58		58	
19	31								115	3.40				0.88		0.70	84	21	400	33						90.67	136		136	
15	74							3	126	2.10				4.03							3	5	5	85	53.00	102.00	153	-49.00	153	
24	198							2	131	4.50	7.86	4.40		0.84	39	1.10	103	40	258	22	3	180	54	44	75.00	80.00	120	-5.00	120	
15	68																													

PCR	PCRPOS	CULTUR	OPENPR	CSFPRO	CSFGR	CSFGR	XRAYDN	XRAY	CT	CTBRAIN	USGDN	USG	MRI	MRIBRAI	ADMITW	DOA	DOD	MONTH	HOSSTA	DAYSWA	ADMITIC	DAYSCL	IONOTR	DAYSION	VENTILA	DAYSVE	VENTILF
3		no growt		700.00	1	negative	1	normal	1	old traum	2		2		1	12-Jan-2016	16-Jan-2016	1	4	4			2		2		
2				316.00	2		1	normal	1	Multiple c	2				1	22-Jan-2016	26-Jan-2016	1	4	4	2		2		2		
2				48.70	1	occ pus c		1	normal	2	2		1	Hi L front	1	20-Jan-2016	02-Mar-2016	1	39		1		1		1		
3				52.90	2		1	Normal	1	hypodens	2	2	2		1	09-Feb-2016	09-Feb-2016	2	1	1	2		2		2		
3				110.00	2		2		1	NORMAL	2	2	2		1	18-Feb-2016	04-Mar-2016	2	15	15	2		2		2		
		Streptoc	16	121.50	1	GPC			1	Normal			1	Normal	1	16-Mar-2016	30-Mar-2016	3	14	6	1	9	2		1	7	21
								1	Normal						1	22-Apr-2016	26-Apr-2016	4	4	4	2		2		2		
								1	Normal	2	2	2	2		1	28-Apr-2016	05-May-2016	4	7	7	2		2		2		
								1	Normal						1	28-Apr-2016	06-May-2016	4	8	8	2		2		2		
2		no growt		139.00	1	occasi	2		2		2		1	normal	1	02-Apr-2016	15-Apr-2016	4	13	13	2		2		2		
3		No growt		29.90	1	No pus c			1	normal	2	2	2		1	07-Aug-2015	08-Aug-2015	8	1	1	2		2		2		
								1	Right ple	2			1	Subtle pe	1	01-Sep-2015	04-Sep-2015	9	3	3	2		2		2		
2		No growt		42.60	1	Occasion	1	Normal	2		2		1	Splenial	1	04-Sep-2015	25-Sep-2015	9	21	21	2		2		2		
3		No growt		143.00	1	Occasion	1	NORMAL	1	Calcified	2	2	2		1	03-Oct-2015	09-Oct-2015	10	6	6	2		2		2		
2				164.90	1	Normal	1	Normal	1	Normal	1	Normal	1	Normal	1	10-Oct-2015	10-Oct-2015	10	7	7	2		2		2		
2		no growt		125.90	1	few pus c	1	Normal	2		2		1	FLAIR su	1	20-Oct-2015	26-Nov-2015	10	37	13	1	24	2		1	20	8
				50.50	1	Occasion	1	Normal							1	28-Dec-2015	30-Dec-2015	12	2	2	2		2		2		
								1	Normal	1	Normal	1	1	TO REVIL	1	09-Dec-2015	25-Dec-2015	12	16	7	1	9			1	9	
2				52.20	2		1	NORMAL	1	NORMAL	2	2	2		1	07-Jan-2016	09-Jan-2016	1	2	2	2		2		2		
2				43.10	2		1	NORMAL	2		2		1	NORMAL	1	01-Jan-2016	05-Jan-2016	1	4	4	2		2		2		
								1	NORMAL	1	Normal	2	2		1	16-Jan-2016	20-Jan-2016	1	4	4	2		2		2		
2		no growt		144.10	1	moderate	1	normal	1	normal	2	2	2		1	10-Jan-2016	15-Jan-2016	1	5	5	2		2		2		
2		no growt		72.60	1	occ pus c	1	normal	2		2		1	Flair HJr	1	27-Jan-2016	01-Feb-2016	1	5	5	2		2		2		
								1	NORMAL	2	2	2	1	chronic g	1	09-Jan-2016	15-Jan-2016	1	6	6	2		2		2		
2				73.90	2		1	Normal	2	2	2		1	Normal	1	09-Jan-2016	15-Jan-2016	1	6	6	2		2		2		
								1	sugg of A	2	2	2	1	normal	1	21-Jan-2016	27-Jan-2016	1	6	3	1	3	2		2		
2				66.80	2		1	Normal	2		2	2	2		1	23-Jan-2016	29-Jan-2016	1	6	6	2		2		2		
		Streptoc		392.50	2		1	Normal	1	Diffuse s	2	2	1	Bilateral	1	29-Jan-2016	05-Feb-2016	1	7	7	2		2		2		
3				469.00	2		2		2		2	2	1	Flair HJr	1	23-Jan-2016	31-Jan-2016	1	8	8	2		2		2		
2		no growt	16	110.00	1	few pus c	1	normal	1	normal	2	2	1	patchy ar	1	31-Jan-2016	08-Feb-2016	1	8	8	2		2		2		
2		no growt		110.00	1	few pus c	1	normal	2		2	2	1	flair sulca	1	31-Jan-2016	08-Feb-2016	1	9	9	2		2		2		
								1	normal	1	normal	2	2		1	23-Jan-2016	04-Feb-2016	1	12	12	2		2		2		
								1	NORMAL	1	cerebral	2	2		1	21-Jan-2016	04-Feb-2016	1	14	10	1	4	2		1	4	24
								1	NORMAL	2	2	2	1	Scattered	1	23-Jan-2016	06-Feb-2016	1	14	14	2		2		2		
								1	normal	1	increase	2	1	scattered	1	23-Jan-2016	06-Feb-2016	1	14	14	2		2		2		
								1	normal	1	features	2	2		1	02-Jan-2016	16-Jan-2016	1	16	11	1	5	2		1	2	26
								1	NORMAL	2	2	2	2		1	11-Jan-2016	30-Jan-2016	1	19	10	1	9	2		1	2	26
								2		1	feature of	2	2		1	02-Jan-2016	26-Jan-2016	1	24		1	5	2		1	2	26
2				97.50	2		2		1	normal	2	2	1	subtle fla	1	29-Feb-2016	02-Mar-2016	2	2	2	2		2		2		
3				35.10	2		1	normal	1	normal	2	2	2		1	26-Feb-2016	01-Mar-2016	2	4	4	2		2		2		
3				71.50	2		1	normal	1	chronic in	2	2	2		1	21-Feb-2016	26-Feb-2016	2	5	5	2		2		2		
2				51.90	2		1	Normal	2		2	2	1	leptomen	1	21-Feb-2016	27-Feb-2016	2	6	6	2		2		2		
3				51.10	2		1	NORMAL	1	Cerebral	2	2	2		1	18-Feb-2016	25-Feb-2016	2	7	2	1	5	2		2		
2		no growt		85.00			1	normal	2		2	2	2		1	21-Mar-2016	23-Mar-2016	3	3	1	2	2	1	2		2	
							1	normal	2		2	2	2		1	26-Mar-2016	30-Mar-2016	3	4	4	2		2		2		
2				72.00	1	few pus c	1	Normal	1	Foramen			1	Meninges	1	03-Mar-2016	08-Mar-2016	3	5	5	2		2		2		
				126.70	1	Negative	1	Normal	1	Normal					1	05-Mar-2016	10-Mar-2016	3	5	5	2		2		2		
				68.60	1	no pus	1	normal	1	normal	2	2	2		1	08-Mar-2016	13-Mar-2016	3	5	1	1	4	1	1	1	3	
1	HSV_EBV			239.40	2		1	Normal	1	Normal	2	2	1	subtle lep	1	25-Mar-2016	30-Mar-2016	3	5	5	2		2		2		
				162.50	1	Negative	1	Normal					1	Meng ent	1	23-Mar-2016	30-Mar-2016	3	7				2		2		
1	mycobac			810.00	1	many pus	2		1	normal	2	2	2		1	26-Mar-2016	03-Apr-2016	3	8	8	2		2		2		
3				207.60	2		1	normal	1	diffuse co	2	2	2		1	20-Mar-2016	29-Mar-2016	3	9	2	1	7	2		1	5	23
2				262.50					1	Age relat					1	29-Mar-2016	14-Apr-2016	3	16				2		2		
							2		2		2	2	2		1	25-Apr-2016	26-Apr-2016	4	1	1	2		2		2		
							2		2		2	2	2		1	26-Apr-2016	28-Apr-2016	4	2	2	2		2		2		
							1	Normal	2		2	2	2		1	21-Apr-2016	24-Apr-2016	4	3	3	2		2		2		
							1	Bilateal	2		2	2	2		1	24-Apr-2016	27-Apr-2016	4	3	1	2		2		1	2	26
							1	normal	1	normal	2	2	2		1	24-Apr-2016	28-Apr-2016	4	4	4	2		2		2		
							1	Normal	1	Normal					1	26-Apr-2016	01-May-2016	4	5	5	2		2		2		
							1	normal	2		2	2	2		1	27-Apr-2016	02-May-2016	4	5	3	1	2	1	2		2	
							1	normal	1	age relat	2	2	2		1	16-Apr-2016	22-Apr-2016	4	6	6	2		2		2		
3				50.10	2		1	Normal	2		2	2	2		1	22-Apr-2016	28-Apr-2016	4	6	6	2		2		2		
2				85.60	2		1	NORMAL	2		2	2	2		1	01-Apr-2016	08-Apr-2016	4	7	7	2		2		2		
3					2		1	normal	1	paucity c	2	2	1	leptomen	1	08-Apr-2016	16-Apr-2016	4	8	8	2		2		2		
2				51.30	2		1	Normal	1	Normal	2	2	2		1	18-Apr-2016	26-Apr-2016	4	8	8	2		2		2		
							1	NoRMAL	1	NORMAL	2	2	2		1	21-Apr-2016	29-Apr-2016	4	8	8	2		2		2		
2				38.50	2		1	Normal	2		2	2	2		1	23-Apr-2016	01-May-2016	4	8	8	2		2		2		
							2		2		2	2	2		1	09-Apr-2016	18-Apr-2016	4	9	3	1	6	1		1	5	
							1	Normal	2		2	2	2		1	27-Apr-2016	06-May-2016	4	9	9	2		2		2		
				52.70			2		2		1	PUJ obst	1	secondar	1	21-Apr-2016	01-May-2016	4	10	10	2		2		2		
3					2		1	Normal	1	Increase	2	2	1	Flair Sulc	1	08-Apr-2016	20-Apr-2016	4	12	12	2		2		2		

DYSFUN	TYPE	SPES	ANTIBIO	ANTIPY	ANTIEP	ANTIDUR	AZITH	AZITHD	DOXY	DOXYD	CFTRI	CFTRID	PIPTA	PIPTAD	MERO	MEROD	PENCIL	PENCILD	JACYLQ	ACYDR	ATT	STREO	ANTIEP	HA	TYPE	HAIR	MRSAD	MRSDIS	MRS1M	COND	DAMA	DISCHA	FAT1M	MONF	ALDIA	FINALD
2			1			2		2			1	16	2		2		2		2		2	2	2	2		2	3		2	2	1	0	acute bak			
2			1			2		2			1	14	2		2		2		2		2	2	2	2		0	0		2	2	1	0	Pyogenic			
2			2																1	14	2	2	2	2		0	4		1	1	1	0	autoimmu			
2			2																2		2	2	2	2		0	0		1	1	1	0	viral ence			
1 renal			2			2		2			2		2		2		2		2		2	2	2	2		0	0		2	2	1	0	Cryptoco			
2			1	Ceftriaxo							1	8							2		2	2	2	2		0	2		2	2	1	0	Pneumoc			
1 Renal			2																2		2	2	2	2		0	0		2	2	1	0	Heat stro			
2			2																2		2	2	2	2		3	3		2	2	1	0	heat stro			
2			2																2		2	2	2	2		0	0		2	2	1	0	Heat stro			
2			2																2		1	1	2	2		0	0		2	2	1	0	tuberculo			
2			1	Ceftriaxo	2	2		1	2	1	2	2	2		2		2		2		2	2	2	2		0	5		1	1	1	0	Viral men			
2			2																2		1	1	2	2		0	0		2	2	1	0	Probable			
2			1	Ceftriaxo	14	2		2			1	14	2		2		2		1	14	2	2	2	2		0	4		2	2	1	0	Acute vir			
2			1			2		2			1	14	2		2		2		2		2	2	2	2		0	0		2	2	1	0	Viral men			
2			1								1	14							1	2	2	2	2	2		0	0		2	2	1	0	Partially			
2			1	Ceftriaxo		2		2			1	14							1	14	2	2	1	1 VAP		0	5		2	2	1	0	Partially			
2			1								1	2							2		2	2	2	2		2	2		2	2	1	0	Neurolep			
2			1												1	14			1		2	2	2	2		0	4		2	2	1	0	Sepsis ac			
2			1			1	10	2			1	10	2		2		2		1	14	2	2	2	2		0	0	0	1	1	1	1	Scrub Me			
2			1			1	5	1	7	2		2		2		2		2		2	2	2	2	2		0	0	0	0	2	2	1	1	Scrub En		
2			2																2		2	2	2	2		0	0	0	2	2	1	1	Metaboli			
2			1			1	5	2			2		2		2		2		2		2	2	2	2		0	0	0	2	2	1	1	Scrub en			
2			1			1	5	1	7	2		2		2		2		2		2	2	2	2	2		0	0	0	2	2	1	1	Scrub en			
2			1			1	4	1	7	1	4	2		2		2		2		1	4	2	2	2	2		0	0	0	2	2	1	1	Scrub en		
2			2																2		2	2	2	2		0	0	0	1	1	1	1	Metaboli			
1 renal, he			1			1	6	1	12	2		1	2	2		2		2		2	2	2	2	2		0	3	0	2	2	1	1	1	Scrub su		
1 Renal			1			2		2			1	14	2		2		2		1	2	2	2	2	2		0	0	0	2	2	1	1	Partially			
2			1			2		2			1	14	2		2		2		2		2	2	2	2		0	0	0	2	2	1	1	Pneumoc			
2			1			1	5	2		2		2		2		2		2		1	1	1	2	2		0	0	0	2	2	1	1	TB men			
2			1			2		2			1	11	2		2		2		1	2	1	1	2	2		0	0	0	2	2	1	1	tuberculo			
2			1			2		2			1	9	2		2		2		1	2	1	1	2	2		0	0	0	2	2	1	1	Tubercu			
1 renal			1			2		2		2		2		2		2		2		2	2	2	2	2		0	0	0	2	2	1	1	viral men			
2			1			2		2				1	6	1	3	2			1	14	2	2	2	2		0	0	0	2	2	1	1	Varicella			
2			2																1	141	2	2	2	2		0	0	0	1	1	1	1	Asceptic			
2			1			2		2			1	14	2		2		2		1	14	2	2	2	2		0	0	0	2	2	1	1	Viral men			
2			1			1	5	2			1	7	2		2		2		1	4	2	2	2	2		0	0	0	2	2	1	1	Scrub en			
1 RENAL			1			1	5	2			2		1	5	1	2	2		2		2	2	2	2	1 vap		0	0	0	2	2	1	1	Scrub me		
2			1			1	15				1	15							1	15	2	2	1	2		0	0	0	2	2	1	1	Scrub me			
2			1			2		2			1	14	2		2		2		2		2	2	2	2		0	0	0	2	2	1	1	partially			
2			2																2		2	2	2	2		0	0	0	1	1	1	1	Acute psi			
2			1			1	5	2			2		2		1	10	2		2		2	2	2	2		0	2	0	2	2	1	1	Scrub en			
2			1			1	5	2			2		2		2		2		1	5	2	2	2	2		0	0	0	2	2	1	1	Viral men			
1 RENAL			1			2		2			2		2		1	10	2		2		2	2	2	2		0	0	0	2	2	1	1	Sepsis re			
1 renal			1																2		2	2	2	2		0	0	0	2	2	1	1	Sepsis as			
1 RENAL			1			1	3	2			2		1	4	2		2		2		2	2	2	2		0	0	0	2	2	1	1	heat stro			
2			1			1	9	1	6										1	3	2	2	2	2		0	0	0	2	2	1	1	Meningoc			
2			1			1	15						1	6					2		2	2	2	2		0	0	0	2	2	1	1	Scrub me			
2			1			1	10	2			1	2	2		2		2		2		2	2	2	2		0	0	0	2	2	1	1	Scrub me			
2			1			2		1	1	1	3	2		2		2		2		1	14	2	2	2	2		0	0	0	2	2	1	1	HSV Men		
2			2																2		1	1	2	2		0	3	0	2	2	1	1	tuberculo			
2			1			1	4	2			2		2		2		2		2		1	1	1	2		0	0	0	2	2	1	1	tuberculo			
1 renal			1			1	4	1	10	2		2		2		2		2		2	2	2	2	2		0	0	0	2	2	1	1	Scrub Me			
2			2																1	10	2	2	2	2		0	0	0	2	2	1	1	Viral men			
2			2																2		2	2	2	2		0	3	0	1	1	1	1	heat stro			
2			2																2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
2			2																2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
2			1			1	51	2			2		2		2		2		2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
2			2																2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
1 renal fail			1																2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
2			2																2		2	2	2	2		0	0	0	2	2	1	1	Heat stro			
1 Renal			1			2		2			2		1	3	1	4	2		2		2	2	2	2		0	3	0	2	2	1	1	Heat Stro			
2			1			2		2			1	14	2		2		2		1	3						0	3	0	2	2	1	1	partially			
2			1			2		2			1	14	2		2		2		1	2	2	2	2	2		0	0	0	2	2	1	1	acute bak			
2			1			2		2			1	5	2		2		2		1	3	2	2	2	2		0	0	0	1	1	1	1	Viral men			
1 renal			2																2		2	2	2	2		0	0	0	2	2	1	1	Heat Stro			
2			1			2		2			1	14	2		2		2		2		2	2	2	2		0	0	0	2	2						

[illegible]

2	2	2	2	4	6	4	14	2	2	2	2	26	104	120	80	97	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	72	110	80	98	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	2	12	2	2	2	2	24	102	150	90	89	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	22	86	120	80	98	98.20			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	3	5	2	10	2	2	2	2	35	114	180	100	86	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	24	94	100	60	98	96.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	5	2	11	2	2	2	2	20	102	100	60	92	100.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	2	5	1	8	2	2	2	2	22	61	140	80	99	99.00			1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	80	180	100	99	99.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	36	130	160	90	95	102.00	Seizure d		2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	28	90	130	80	99	103.00			1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	20	80	90	60	99	98.60			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	24	72	90	60	96	96.60			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	5	4	13	2	2	2	2	20	104	160	100	96	100.00			2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	20	96	100	60	97	96.70			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	72	148	74	99	99.40			2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	
1	2	2	2	4	6	5	15	2	2	2	2	22	118	110	80	99	98.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	
2	2	2	2	1	2	5	2	2	2	2	2	24	100	160	70	99	99.00	RIGHT E		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	22	114	170	90	96	98.40			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	24	114	90	50	97	97.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	3	5	2	10	2	2	2	2	20	90	110	70	99	98.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	26	144	90	70	93	101.40	Rashes	Eschar nt	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	4	6	5	15	2	2	2	2	22	74	120	80	98	97.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	1	2	2	20	86	100	60	94	99.70			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	122	110	80	95	97.70	OA both		1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	22	88	120	80	97	98.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	110	140	80	95	98.60			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	22	75	130	80	99	98.20			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	22	112	130	80	97	99.00			1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	18	82	100	60	99	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	20	68	120	80	98	101.20	CSF rhin	Hypothyri	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	1	1	1	3	1	2	2	2	24	97	100	60	99	95.00	Nephrotic		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	3	5	4	12	2	2	2	2	22	128	110	70	99	102.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	6	4	5	15	1	2	2	2	20	72	110	70	97	98.00	Eschar	Hypothyri	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	4	6	5	15	2	2	2	2	20	94	140	100	.	.			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	116	70	0	98	98.40			2	2	2	2	2	2	2	2	1	2	2	2	2	2		
2	2	2	2	4	5	2	11	2	2	2	2	20	106	150	100	99	99.00			1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	22	80	140	90	98	99.00			1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	
2	2	2	2	2	4	1	7	2	2	2	2	24	108	130	80	95	103.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	1	2	2	3	5	3	11	2	2	2	2	16	106	100	70	99	97.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	22	120	100	60	99	98.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	5	4	13	2	2	2	2	24	94	100	60	92	100.60			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	1	5	2	8	2	2	2	2	22	116	140	90	99	.			1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	18	92	110	60	98	98.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	1	2	2	2	74	88	70	0	99	97.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	2	5	2	9	2	2	2	2	24	88	70	40	95	.			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	20	98	100	70	100	98.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	3	5	3	11	2	2	2	2	20	92	140	80	92	98.00			1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	2	5	2	9	2	2	2	2	18	82	180	80	91	.			1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	3	5	2	10	2	2	2	2	24	96	130	70	97	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	1	1	2	2	30	80	100	60	92	98.20			1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	
2	2	2	2	4	4	6	14	2	2	2	2	24	48	110	0	96	.			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	5	15	2	2	2	2	22	67	120	86	100	98.80			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	24	98	100	60	96	99.10			1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	20	92	90	60	97	99.00			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	2	2	2	4	6	4	14	2	2	2	2	16	122	110	60	96</																			

			3	130	4.10				1.07		1.50	79	21	376		2	360	32	68	66.00	119.33	179	-53.33	179	2		No growt	
				140	4.70				0.77							3	540	1	97	58.00	97.33	146	-39.33	146	1	VARICE	No growt	
			3	129	4.10				2.10	48	1.40	44	21	210	35	3	3	0	70	108.00	115.33	173	-7.33	173	1	CMV PC	No growt	
			2	139	3.80	9.97	2.60	1.70	0.51							3	3	0	100	72.00	109.33	164	-37.33	164	2		no growt	
38.70			2	130	4.50	9.50	4.50	1.50	1.19	28		31	20	155	31	3	1	0	100	170.00	410.00	615	-240.00	619	3		No growt	
29.80			2	136	3.70	7.60	2.70	2.15	0.81	36	1.70					3	3	0	100	84.00	76.67	115	7.33	115	2		no growt	
			3	145	3.30				0.77	21						3	180	3	93	77.00	82.00	123	-5.00	123	2		no growt	18
35.50			3	129	4.10	8.10	3.50	2.07	0.72	40	1.60	185	30	617	32	3	20	73	22	102.00	156.00	234	-54.00	234	2		No growt	
			2	144	3.50				1.27	34						3	8	8	64	74.00	60.67	91	13.33	91	2		no growt	
			2	129	3.00	8.30	1.50	2.26	1.19	147						3	3	0	100	85.00				147	3		No growt	
			3	123	4.00				1.12	41						3								432				
			3						0.46							3	300	1	92	39.00	60.67	91	-21.67	91	3		no growt	
			3	138	3.30				0.85							3	380	6	94	45.00	72.00	108	-27.00	108	3		No growt	
34.70			2	137	4.20				1.80	63	1.80	73	21	348		3	30	77	20	68.00	74.00	111	-6.00	111	3			
			2	133	4.30				0.61							3	260	6	93	27.00					3		Mycobac	
29.80			3	134	3.90	8.11	2.20		0.68	19						3	20	85	12	67.00	104.00	156	-37.00	156	2		No growt	
			2	130	4.20				0.67							3	6	12	82	36.00	67.33	101	-31.33	101	3		No growt	
34.30	24.50		3	136	4.40			1.98	0.93		1.80	74	100	74	26	3	15	36	56	183.00	243.33	365	-60.33	365	1	Adenovir	No growt	
35.60				135	2.60	15.50	3.10	1.45	2.50	31	0.70	93					1	100	0	74.00				110	3		No growt	
			2	132	4.00	10.40	2.60		7.00	18						3	10	6	94	57.00	70.67	106	-13.67	107	3		No growt	
			2	134	3.40	8.60	4.30		0.72								70	1	89	61.00	64.67	97	-3.67	97	2		No growt	
39.30	79.40		2	123	3.90	7.88	2.70		0.77	37						2	50	30	50	75.00	77.33	116	-2.33	116	3		No growt	
33.40	26.20		2	130	3.50				0.63	20	1.40	82	20	410	32		160	8	90	46.00								
			2	107	4.30	7.50	2.30	1.88	1.00		1.00	82	21	390	31		3	1	4	63.00				106				
			3	127	3.50	8.63	1.60	1.93	1.73	83	1.90	74	100	74	37	3					97.33	146			146			
35.50	19.90		2	132	4.50	9.05	4.00		0.66							3	160	51	48	71.00	82.67	124	-11.67	124	2		No growt	27
			2	128	4.10	8.48	3.60	1.96	0.77	33	0.90	72	24	300	32	3	540	15	55	41.00	64.67	97	-23.67	97	2		No growt	
			2	118	4.10	8.90	4.60		0.87	36						3	80	51	44	13.00	80.00	120	-67.00	120	3		No growt	
	0.05		2	129	3.70	10.50	4.50		1.15	45	2.50	167	21	795	39	3	50	6	88	108.00	324.67	487	-216.67	487	1	HSV-1	No growt	
			3	135	4.40	8.76	3.10		0.60	10						3	20	92	8	107.00	88.00	132	19.00	132	2		No growt	
			3	129	3.20				0.66	17						3	1,900	94	4	48.00	90.00	135	-42.00	135	3		No growt	
52.70	72.04		2			7.58	7.00		2.20	126		105			30	3	4,000	82	6	96.00	84.67	127	11.33	127	3		Antigen c	
			3	134	3.80				1.16	30	1.80	49			37	3	35	4	86	97.00	87.33	131	9.67	131	2		No growt	
			3	126	4.40				1.09								10	0	99	64.00	227.33	341	-163.33	341	3		no growt	
			2	135	3.40				1.11	27						3	7	15	85	62.00	78.67	118	-16.67	118	2		no growt	
			1	133		7.89	3.70		0.52	28						3	95	20	76	49.00	94.00	141	-45.00	141	1	EBV	No growt	
			2	133	4.50	8.30	3.70	1.43	1.24	38	1.50	52			42	2	190	7	91	147.00	135.33	203	11.67	203	2		no growt	
36.50			3	128		4.60			0.93	47						3	480	4	95	124.00	135.33	203	-11.33	203	2		no growt	
				106	3.10	7.91	2.80	1.93	0.54	14	0.90	136	21	648	25	3	3	0		70.00	104.00	156	-34.00	156	3			
30.10			2	122	4.00				2.80	197	3.30	76	21	362	26		1,500	10	83	89.00	296.00	444	-207.00	444	2			
			2	130	3.80				0.70							1	0	100	94.00	78.67	118	15.33	118	3		no growt		
			2	136	4.20				0.74		1.30	72			29		110	1	98	35.00				100	1	EBV	no growt	
			2	111	3.60	7.10	2.00	0.95	0.37	10	0.70	91	21	433	29	3	25	94	4	109.00	116.00	174	-7.00	174	2		no growt	
			2	136	4.00				0.68	30	1.70	102	21	486	35		420	60	28	44.00	82.00	123	-38.00	123				
29.50			2	135	3.20	7.37	4.50			20	0.90	89	21	424	29		3	1	9	72.00	150.00	225	-78.00	225	2		no growt	
40.50			3	140	4.30		5.30	1.97	1.64	64	1.20	132	21	629	28		60	0	98	50.00	72.00	108	-22.00	108	1	EBV	no growt	
			2	136	3.90	8.50	2.90	2.19	0.84	16						1	0	1	62.00	74.67	112	-12.67	112	2		no growt		
			2	116	2.40	8.20	2.60		0.83	27	1.80	44	21	210	34		5	1	4	92.00	134.00	201	-42.00	201	2		no growt	
38.30	7.22			136	3.50	9.70	2.50	1.61	0.48	20	5.10	46			48		6,400	92	8	62.00	117.33	176	-55.33	176			No growt	
61.40			2	141	4.00		3.20	2.15	0.94	55	1.50	160	30	533	30		40	2	98	96.00	62.67	94	33.33	94	2			
38.10			2	127	4.40	9.30			2.88	104	1.60	100			15													
			2	135	3.50				0.63	23							140	51	47	44.00	68.00	102	-24.00	102	2			
			2	138	3.90				0.65								610	59	37	54.00				116				
				145	3.40	8.50	1.80	2.69	1.59	47							4	0	4	110.00	107.33	161	2.67	161	2			
33.60				137	3.60															64.67	97							
			2	121	2.70												7	3	21	48.00				111				
35.00				127	4.00	8.20	2.20		1.27	48	1.00	70			29		25	20	78	53.00	84.00	126	-31.00	126				
				133	3.10				0.89	32							300	48	39	163.00								
			2	135	4.40				0.57	27							14	10	35	49.00	66.67	100	-17.67	100	2			
28.60			2	135	3.60	8.90	2.70		0.66	19							240	3	7	58.00	125.33	188	-67.33	188	2		No growt	
			2	133	3.40				1.23		1.90	77			29	2	30	79	20	111.00	106.67	160	4.33	160				
			2	126	3.10				1.15	35							40	20	78	62.00	76.67	115	-14.67	115				
			2	126	3.40	11.00	3.80		0.86								5	24	60	65.00	78.67	118	-13.67	118				
51.60			2	136	3.20	9.50	3.50	2.48	0.96	23						3	260	20	76	38.00					1	EBV	no growt	
			2	104	2.90				0.48	26							3	0		61.00	90.67	136	-29.67	136	2			

114.50	1	Few pus	2	not done	1	normal	2		2		1	22-Jun-2015	27-Jun-2015	6	5	5	2		2		2		2		1
145.00	1	occ pus c	1	normal	1	normal	2	NOT DO	2	not done	1	08-Jun-2015	14-Jun-2015	6	6	6	2		2		2		2		2
40.10	2		1	Normal	1	Normal	2		2		1	18-Jun-2015	26-Jun-2015	6	8	8	2		2		2		2		2
14.80	1	occ pus c	1	normal	1	NORMAL	2	Not done	1	NORMAL	1	05-Jun-2015	14-Jun-2015	6	9	9	2		2		2		2		1
33.30	1	No pus c	1	normal	1	normal	2	NOT DIN	2	NOT DO	1	22-Jun-2015	02-Jul-2015	6	10	10	2		2		2		2		2
33.40	2		1	Normal	1	normal	2	not doe	1	normal	1	08-Jul-2015	14-Jul-2015	7	6	6	2		2		2		2		2
74.00	2		1	Normal	1	bilareal g	2	not done	2	not done	1	22-Jul-2015	28-Jul-2015	7	6	6	2		2		2		2		1
45.40	1	many pus	1	NORMAL	2		2		1	Mild corti	1	26-Jul-2015	05-Aug-2015	7	10	10	1	5	2		1	3	25	2	1
71.80	1	No pus c	1	normal	1	HYPPDE	2	not done	1	diffuse le	1	26-Jul-2015	06-Aug-2015	7	11	11	2		2		2		2		1
37.40	1	No pus ce	1	normal	1	old calioif	2	normal	2		1	03-Jul-2015	22-Jul-2015	7	19	12	1	7	2		1	3	25	1	renal req
			1	normal	2	Not done	2	Not done	2	Not done	2	30-Aug-2015	30-Aug-2015	8	1	1	2		2		2		2		1
52.30	1	few pus c	1	normal	2	Solitary r	2	Normal	2	Not done	1	02-Aug-2015	05-Aug-2015	8	3	3	2		2		2		2		2
227.40	1	No bacter	1		1	Old gran	2		2		1	14-Aug-2015	18-Aug-2015	8	4	4	2		2		2		2		1
75.70	1	occ pus c	1		1	BILMCA	2		2		1	26-Aug-2015	31-Aug-2015	8	5	5	2		2		2		2		1
251.30	1	Moderate	1	Normal	1	Meningiti	1	Gall blad	2		1	28-Aug-2015	02-Sep-2015	8	5	5	2		2		2		2		1
84.00	1	No pus ce	1	Normal	1	Hypoden	2		1	Acute to	1	05-Aug-2015	11-Aug-2015	8	6	6	2		2		2		2		1
81.80	1	No pus ce	1	Normal	2		2	Not done	1	Normal	1	06-Aug-2015	14-Aug-2015	8	8	8	2		2		2		2		1
123.70	1	occ pus c	1		1	Age relat	2		1	No signif	1	17-Aug-2015	28-Aug-2015	8	11	5	1	6	1	3	1	5	23	2	1
52.40	1	No pus ce	1	Normal	1	Normal	2		2		1	29-Aug-2015	19-Sep-2015	8	21	21	2		2		2		2		2
45.70	1	No pus c	1	normal	1	Few cald	2		2		1	12-Sep-2015	13-Sep-2015	9	1		2		2		2		2		
57.80	1	Few pus	1	Normal	1	Normal	1	Normal	1	Normal	1	11-Sep-2015	14-Sep-2015	9	3	3	2		2		2		2		2
68.20	1	few pus c	1	Normal	1	Normal	2		2		1	26-Sep-2015	29-Sep-2015	9	3	3	2		2		2		2		1
68.60	1	Occasion	1	Normal	1	Normal			1	Bil fronta	1	23-Sep-2015	27-Sep-2015	9	4	4	2		2		2		2		1
44.70			1	Rt MZ op	1	Normal			1	lt frontal	1	12-Sep-2015	17-Sep-2015	9	5	5	2		2		2		2		1
			1		1	Subacute	1	normal ki	2		1	03-Sep-2015	09-Sep-2015	9	6	6	2		2		2		1	renal	1
56.20	1	Few pus	1	Cavity ft	2		1	Normal	1	Flair sulc	1	21-Sep-2015	27-Sep-2015	9	6	6	2		2		2		2		2
271.50	1	No pus c	1	Normal	1	Hypointe	1	Normal	2		1	27-Sep-2015	03-Oct-2015	9	6	6	2		2		2		2		1
298.20	1	Occasion	1	Normal	2		2		1	Leptome	1	04-Sep-2015	15-Sep-2015	9	11	11	2		2		2		2		1
132.00	1	few pus c	1	Normal	1	Confluen	2		1	Subcoric	1	14-Sep-2015	25-Sep-2015	9	11	11	2		2		2		2		1
216.00	1	Occasion	1		1	Mild pron	2		1	gyral ede	1	22-Sep-2015	07-Oct-2015	9	15	13	2		2		2		2		1
403.50	1	Few pus	1	Normal	2		2		1	Small def	1	03-Sep-2015	19-Sep-2015	9	16	16	2		2		2		2		1
302.80	1	Occasion	1	normal	1	Normal	2		1	Cavernou	1	15-Sep-2015	11-Oct-2015	9	26	18	1	8	2		1	8	20	1	Renal fail
84.10	1	No pus, r	1	Normal	1	Normal	2		2		1	08-Oct-2015	11-Oct-2015	10	3	3	2		2		2		2		1
80.60	1	Occasion	1	normal	1	Normal	2		2		1	11-Oct-2015	14-Oct-2015	10	3	3	2		2		2		2		1
79.40	1	No pus c	1	Normal	1	Normal	2		1	Normal	1	18-Oct-2015	23-Oct-2015	10	5	5	2		2		2		2		2
75.30	2	occ pus c	1	Normal	2		2		2		1	31-Oct-2015	06-Nov-2015	10	6	6	2		1	1	2		2		2
189.60	1	few pus c	1	Normal	2		2		1	FLAIR hy	1	23-Oct-2015	31-Oct-2015	10	8	8	2		2		2		2		1
114.50	2		1	Normal	1	sulcal eff	2		2		1	27-Oct-2015	06-Nov-2015	10	10	10	2		2		2		2		1
53.00	2		1	Normal	1	Normal	2		2		1	31-Oct-2015	25-Nov-2015	10	25	25	2		2		2		2		2
77.00					1	Normal					1	27-Nov-2015	29-Nov-2015	11	2	2	2		2		2		2		1
34.20	1	No pus c	1	Normal							1	11-Nov-2015	15-Nov-2015	11	4	4	2		2		2		2		1
115.70	1	Occasion	1	Normal	1	Normal	2		2		1	21-Nov-2015	26-Nov-2015	11	5	5	2		2		2		2		1
129.00	1	No pus, r	1	Normal	1	Normal	1	Normal	1	? mening	1	24-Nov-2015	29-Nov-2015	11	5	5	2		2		2		2		2
214.60	1	Many pus			1	Normal					1	29-Nov-2015	04-Dec-2015	11	5	5	2		2		2		2		1
37.10	1	No pus c	1	Normal	1	Normal	1	Normal	1	Normal	1	11-Nov-2015	18-Nov-2015	11	7	4	1	3	1	1	2		2		1
144.00	1	Occasion	1	normal	1	Normal	1	Normal	2		1	27-Nov-2015	04-Dec-2015	11	7		1	3	1	2	2		1	Renal fail	
35.00	1	No pus c			1	lldefined			1	Rt cystic	1	10-Nov-2015	18-Nov-2015	11	8	8	2		2		2		2		2
61.00	1	No pus c	1	Normal	2		2		1	Chronic i	1	16-Nov-2015	26-Nov-2015	11	10	10	2		2		2		1	Renal	1
511.90	1	Many pus	1	Normal	1	Normal					1	27-Nov-2015	08-Dec-2015	11	11	11	2		2		2		2		1
139.00					1	Normal					1	01-Nov-2015	14-Nov-2015	11	13	4	1	9		1	9		2		1
			1	Normal			1	Renal ab			1	08-Nov-2015	24-Nov-2015	11	16	16	2		2		2		1	Renal fail	1
463.40	1	Occasion	1	Normal	1	Normal					1	13-Dec-2015	14-Dec-2015	12	1		2		2		2		2		1
109.80	1	Moderate			1	Mild pron					1	04-Dec-2015	06-Dec-2015	12	2	2	2		2		2		2		1
78.00	1	Occasion	1	Normal	1	Normal					1	09-Dec-2015	11-Dec-2015	12	2	2	2		2		2		2		2
					1	Diffuse c					1	13-Dec-2015	16-Dec-2015	12	3	3	2		2		2		2		1
29.30	1	Moderate	1	Normal					1	Minimal v	1	23-Dec-2015	26-Dec-2015	12	3	3	2		2		2		2		1
65.70	1	Occasion	1	Normal	1	Normal			1	Normal	1	24-Dec-2015	27-Dec-2015	12	3	3	2		2		2		2		1
195.00	1	Occasion	1	Normal							1	10-Dec-2015	14-Dec-2015	12	4	4	2		2		2		2		1
115.00	1	Occasion	1	Normal	1	Normal					1	24-Dec-2015	28-Dec-2015	12	4	4	2		2		2		2		1
277.20	1	No pus c	1	Normal	1	Normal			1	Normal	1	26-Dec-2015	30-Dec-2015	12	4	4									1
73.90	1	No pus c	1	Normal	1	Normal			1	Normal	1	27-Dec-2015	31-Dec-2015	12	4				2		2		2		1
57.00	1	No pus c	1	Normal	1	Normal					1	31-Dec-2015	04-Jan-2016	12	4		2		2		2		2		1
57.70	1	No pus c	1	Normal	1	Normal					1	12-Dec-2015	17-Dec-2015	12	5	5	2		2		2		2		2
592.60	1	Few pus	1	Normal	2				1	Leptome	1	28-Dec-2015	02-Jan-2016	12	5	5	2		2		2		2		1
29.90	1	No pus c	1	Normal							1	31-Dec-2015	05-Jan-2016	12	5		2		2		2		2		2
53.30	1	No pus c	1	Normal	1	Normal					1	31-Dec-2015	05-Jan-2016	12	5	5	2		2		2		2		1
					1	Mild cere					1	13-Dec-2015	19-Dec-2015	12	6	6	2		2		2		2		1
31.20	1	No pus c							1	Normal	1	23-Dec-2015	29-Dec-2015	12	6	6	2		2		1	2		2	1
204.80	1	Moderate	1	Diffuse in					1	Chronic i	1	10-Dec-2015	17-Dec-2015	12	7	7	2		2		2		2		1
			1	Infiltrate i			1	Bil mild p			1	10-Dec-2015	18-Dec-2015	12	8		1		1					1	
					1	Increase	2		1	Skull bas	1	21-Dec-2015	29-Dec-2015	12	8	5	1	3	2		1	3		2	1
348.00	1	Occasion	1	Normal					1	FLAI&W	1	29-Dec-2015	06-Jan-2016	12	8	8	2		2		2		2		1
					1	Mild hydr					1	02-Dec-2015	11-Dec-2015	12	9	6	1	3		1	2		2		1
			1	Normal							1														

	2		2		1	10	2		2		2		1	3	2	2	2	2	0	0	0	2	2	1	1	Partially	Viral meningoen		
5													1	14	2	2	2	2	0	0	0	2	2	1	1	Varizella			
													1	3	2	2	1	2	0	0	0	2	2	1	1	Alcohol w	Ischiorectal absces		
14	2		2		2		1	14	2		2		1	3	2	2	1	2	0	0	0	2	2	1	1	Viral men	Asceptic meningoe		
1													2	2	2	2	2	0	0	0	1	1	1	1	1	Metabolik			
5													1	3	2	2	2	2	0	0	0	2	2	1	1	Probable			
14	2		2		1	14	2		2		2		1	14	2	2	2	2	0	0	0	2	2	1	1	Viral mer	Partially treated ba		
7	2		2		2		1	7	2		2		1	5	2	2	1	2	0	3	0	2	2	1	1	Probable			
14	2		2		1	14	2		2		2		1	6	2	2	2	2	0	2	0	2	2	1	1	Viral mer	partially treated ba		
	2		2		2		2		1	10	2		2		2	2	1	2	0	3	0	2	2	1	1	Metabolik	Hemaphagocytosis		
1	2		2		2		1	1	2		2		2		2	2	2	2	0	4	0	1	1	1	1	Metabolik	Viral meningoenep		
													2		1	1	2	2	0	0	0	2	2	1	1	Tubercul			
	2		1	7	1	4	2		2		2		2		2	2	1	2	0	0	0	2	2	1	1	Scrub me			
5	2		2		1	2	2		2		2		2		2	2	2	2	0	3	0	1	1	1	1	Viral mer	Partially treated ba		
5	2		2		1	5	2		2		2		2		1	1	2	2	0	0	0	2	2	1	1	Definite			
	2		2		1	14	2		2		2		1	14	2	2	2	2	0	0	0	2	2	1	1	Partially	Viral meningoenep		
14	2		2		1	14	2		2		2		2		2	2	2	2	0	0	0	1	1	1	1	Partially	Viral meningoenep		
	1	3	2		2		2		2		2		1	5	2	2	1	1	Ventilator	0	4	0	2	2	1	1	Adenovir		
													2		2	2	2	2	0	0	0	2	2	1	1	Metabolik			
													1	5	2	2	2	2	0	0	0	2	2	1	1	Probable	partially treated py		
													1	14	2	2	2	2	0	0	0	2	2	1	1	Viral mer			
7	2		1	7	2		2		2		2		2		2	2	2	2	0	0	0	2	2	1	1	Scrub me			
6													2		1	1	2	2	0	0	0	2	2	1	1	Probable	Viral meningitis		
10	2		2		2		1	10	2		2		2		2	2	2	2	0	0	0	1	1	1	1	Metabolik	Aspiration pneumo		
14	2		2		2		2		1	14	2		2		2	2	2	2	0	0	0	2	2	1	1	1	Sepsis as	metabolic enceph	
													2		2	2	2	2	0	0	0	2	2	1	1	1	Viral mer		
7	2		2		1	7	2		2		2		1	7	1	1	2	2	0	0	0	2	2	1	1	Viral mer	Partially treated ba		
5	2		2		1	5	2		2		2		2		1	1	2	2	0	0	0	2	2	1	1	Tubercul			
	2		2		1	5	2		2		2		1	21	2	2	2	2	0	0	0	2	2	1	1	HSV mer			
14	2		2		1	14	2		2		2		2		2	2	1	2	0	0	0	2	2	1	1	Partially	Viral meningoenep		
	2		2		1	14	2		2		2		2		2	2	2	2	0	0	0	2	2	1	1	Acute ba			
14	2		2		1	14	2		2		2		2		2	2	2	2	1	Catheter	0	0	0	2	2	1	1	Pyogenic	Nephrotic syndrom
	1				1								1		2	2	1	2	0	0	0	1	1	1	1	Viral mer			
			1	7									2		2	2	2	2	0	2	0	2	2	1	1	Scrub me			
													1	14	2	2	2	2	0	0	0	2	2	1	1	Probable			
													1	14	1	1	2	2	0	0	0	2	2	1	1	EBV mer	Tuberculous menir		
	2		1	7	1	5	2		2		2		1	4	2	2	2	2	0	0	0	2	2	1	1	Scrub me			
	2		2		1	14	2		2		2		1	4	2	2	1	2	0	3	0	2	2	1	1	Partially	viral meningitis		
													2		2	2	1	1	MSSA SK	0	0	0	2	2	1	1	Toxin rel		
					1	10							1		1	1	2	2	0	0	0	2	2	1	1	1	TB menir	viral meningitis	
	1	5											1	4	2	2	1	2	0	0	0	2	2	1	1	1	Alcohol n	Viral fever	
			1	7	1	7							1		2	2	2	2	0	0	0	2	2	1	1	1	Viral mer		
													1	5	2	2	2	2	0	5	0	1	1	1	1	1	viral mer	partially treated ac	
					1	14									1	1	1	2	0	0	0	2	2	1	1	1	TB menir	viral meningitis	
	1														2	2	2	2	0	0	0	2	2	1	1	1	Scrub me		
	1	5											1	14		2	1	2	0	2	0	2	2	1	1	1	Scrub me	EBV	
													1	14	2	1	1	2	0	0	0	2	2	1	1	1	Neurocys		
													1	14	2	2	2	2	0	0	0	2	2	1	1	1	Metabolik		
					1	14							2		2	2	2	2	0	0	0	2	2	1	1	1	Pyogenic		
					1	10							1	14	2	2	1	2	0	2	0	2	2	1	1	1	viral Men	partially treated ba	
													2		2	2	2	2	0	0	0	2	2	1	1	1	sepsis as		
					1	4							1	4	1	1	1	2	0	0	0	2	2	1	1	1	Tubercul	viral meningoenep	
					1	4							2		1	1	2	2	0	0	0	2	2	1	1	1	Tubercul		
															2	2	1	2	0	0	0	1	1	1	1	1	Acute vir		
			1	7									1	4	2	2	2	2	0	0	0	2	2	1	1	1	Viral mer		
					1	14							2		2	2	2	2	0	0	0	2	2	1	1	1	Enteric e		
	1	3	1	7									2		2	2	2	2	0	0	0	2	2	1	1	1	Scrub me		
	1				1								2		2	2	1	2	0	0	0	2	2	1	1	1	Scrub typ		
	1				1	5							1		2	2	1	2	0	0	0	2	2	1	1	1	Acute vir		
					1	14							1						0	0	0	2	2	1	1	1	Viral mer	Partially treated me	
			1	7									1	14	2	2	2	2	0	0	0	2	2	1	1	1	Viral mer	Partial treated men	
	1	5											1		2	2	2	2	0	0	0	2	2	1	1	1	Scrub me		
													1	14	2	2	2	2	0	0	0	2	2	1	1	1	Viral mer		
					1	2							1	1	1	1	1	2	0	0	0	2	2	1	1	1	Tubercul	EBV meningoenep	
													2		2	2	2	2	0	0	0	2	2	1	1	1	Metabolik	Viral fever	
	1	11			1	14							2		2	2	2	2	0	0	0	2	2	1	1	1	Partially	Viral meningoenep	
													2		2	2	2	2	0	0	0	2	2	1	1	1	1	Sepsis re	Lower limb cellul
					1	10							2		2	2	2	2	0	0	0	2	2	1	1	1	1	Toxic end	Aspiration pneumo
	1	5			1								2		2	2	1	2	0	0	0	2	2	1	1	1	Scrub typ		
	1					1			1				2		2	2	1		0	0	0	2	2	1	1	1	Metabolik	LRTI	
			1		1								1		2	2	2	2	0	0	0	2	2	1	1	1	Acute py		
					1	2							1	4	1	1		2	0	2	0	1	1	1	1	1	Tubercul		
			1										2		2	2			0	0	0	2	2	1	1	1	Probable		
																		1	VAP	0	0	0	2	2	1	1	1	Sepsis as	Hepatic encephalo
													1		2		2	2	0	0	0	2	2	1	1	1	Leptospi		
	1												2		2	2	2	2	1	VAP	0	0	0	2	2	1	1	Acute me	ARDS/ VAP
													1	10	2	2	2	2	0	0	0	2	2	1	1	1	Neurolep		
					1	14							2		2	2	2	2	0	0	0	2	2	1	1	1	Acute py		
					</																								

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2		2		1	3	3	3	3		3	3	3	3			25,500	71	6		211,000	2	1.08	0.40	271	34	87	11.00
2	2	2		2	3	3	3	2		3	3	3	3			11,900	41	45	2	333,000	3	0.40	0.10	13	16	48	
2	2	2		2	2	3	1	2		3	3	3	3	5		23,000	95	3	1	189,000	2	0.38	0.20	45	47	110	11.90
2	2	2		1	3	2	2	2		3	2	3	3			14,800	70	24	2	399,000	2	0.90	0.30	182	48	82	
2	2	2		2	2	3	3	3		3	3	3	3			3,100	90	9	1	162,000	2	3.00	2.10	156	87	109	
2	2	2		2	3	3	3	3		3	3	3	3			7,400	69	27	2	219,000	2	0.49	0.23	92	64	98	11.10
2	2	2		2	1	3	2	2		3	3	3	3			17,300	69	25	2	272,000	2	0.30	0.15	65	55	71	12.20
2	2	2		2	2	3	3	3		3	3	3	3			6,600	69	21			2	0.80	0.20	35	10	66	
2	2	2		2	2	3	2	3		3	3	3	3			11,500	69	25	2	267,000	2	1.50	0.20	21	10	64	
2	2	2		2	2	3	2	2		3	3	3	3			6,800	59	32	2	255,000	2	0.70	0.10	14	17	41	
2	2	2		2	1	2	2	3		3	3	3	3			17,500	90	8	1	16,000	2	1.00	0.70	192	43	203	12.90
1 Anti psyc	2	2		2	2	3	3	2		3	3	3	3			8,500	73	22	2	231,000	2	0.80	0.40	157	45	48	
2	2	2		1	3	3	3	3		3	3	3	3			21,800	87	4	1	193,000	2	2.20	1.60	132	105	75	10.30
2	2	2		2	3	3	2	2		3	3	3	3			10,500	79	16	2	152,000	2	1.10	0.10	33	27	58	12.40
2	2	2		2	1	3	3	2		3	3	3	3			4,900	60	38	2	131,000	2	0.50	0.30	120	39	142	12.60
2	2	2		2	2	3	2	2		3	3	3	3			5,100	73	18	2	200,000	2	0.38	0.10	24	32	53	
2	2	2		2	3	3	3	3		3	3	3	3			4,400	60	25	2	346,000	3	0.40	0.20	20	15	154	
2	2	2		2	3	3	1	2		3	3	3	3			7,500	44	48	2	65,000	2	0.57	0.30	94	93	72	
2	2	2		2	3	3	3	3		3	3	3	3			11,100	76	10	2	270,000	2	0.72	0.25	20	13	60	
2	2	2		2	3	3	3	2		3	3	3	3			19,800	80	16	2	225,000	2						
2	2	2		2	2	3	3	2		3	3	3	3			8,900	86	8	1	229,000	2	1.04	0.39	18	10	58	
2	2	2		2	1	3	3	3		3	3	3	3			17,700	61	28		446,000	3	0.33	0.17	72	104	77	10.90
2	2	2		2	3	3	3	3		3	3	3	3			10,300	94	4		574,000	2	0.40	0.16	28	9	127	10.20
2	2	2		2	3	3	3	2		3	3	3	3			13,200	78	16	2	306,000	2	0.60	0.20	42	17	61	12.00
2	2	2		2	3	3	3	2		3	3	3	3	91	3	15,100	82	9	1	174,000	3	0.80	0.40	55	7	65	
2	2	2		2	3	3	3	2		3	3	3	3			12,200	85	7	1	58,000	2	1.60	0.80	746	184	41	11.60
2	2	2		2	2	3	3	2		3	3	3	3			11,000	87	9	1	134,000	2	0.70	0.30	200	133	45	12.40
2	2	2		2	3	3	3	3		3	3	3	3			10,500	75	11	2	398,000	2	0.23	0.10	15	8	46	
2	2	2		2	3	3	3	3		3	3	3	3			11,400	77	14	2	165,000	2	0.90	0.20	15	12	36	10.80
2	2	2		2	3	3	3	2		3	3	3	3			22,100	89	3	1	318,000	2	0.80	0.20	28	10	150	
2	2	2		2	3	3	3	3		3	3	3	3			6,700	66	27	2	384,000	3	0.24	0.10	19	13	79	10.10
2	2	2		2	3	3	3	3		3	3	3	3			13,700	90	6	1	239,000	3	0.50	0.10	8	7	77	
2	2	2		2	3	3	3	1 proteus n		3	3	3	3			10,200	86	2	1	158,000	3	1.10	0.20	102	20	38	
2	2	2		2	3	3	3	2		3	3	3	3			22,000	91	2	1	235,000	2	0.90	0.50	17	21	91	12.80
2	2	2		2	3	3	3	2		3	3	3	3			10,000	70	20	2	220,000	3	0.80	0.10	19	15	68	
2	2	2		2	3	3	3	3		3	3	3	3			6,300	57	29	2	266,000	2	1.00	0.20	31	26	55	
2	2	2		2	2	2	2	2		2	2	2	2			20,900	87	7	1	366,000	2	0.54	0.18	32	18	107	
2	2	2		2	3	3	3	2		3	3	3	3			20,900	76	17	2	295,000	2	0.40	0.20	25	10	148	11.90
2	2	2		2	3	3	3	2		3	3	3	3			20,200	88	5	1	122,000	2	0.90	0.40	161	90	26	
2	2	2		1	3	3	3	1 Klebsella		3	3	3	3			15,600	83	8	1	338,000	3						
2	2	2		2	2	3	3	2		3	3	3	3			15,200	94	1	1	181,000	2	1.90	1.30	70	21	58	11.40
2	2	2		2	2	2	1	2		3	3	3	3			13,100	43	25	2	62,000	2	12.80	11.40	283	228	382	23.50
2	2	2		2	1	3	3	2		3	3	3	3			10,700	60	32	2	182,000	2	1.10	0.60	207	142	216	10.70
2	2	2		2	3	3	3	2		3	3	3	3			9,700	72	16	2	227,000	2	0.60	0.20	18	10	95	12.70
2	2	2		2	2	3	3	2		3	3	3	3	3		11,700	92	4	1	181,000	2	0.30	0.10	102	36	167	
2	2	2		2	2	2	2	2		3	3	3	3	3		17,100	86	10	2	90,000	2	3.94	3.35	9,780	6,280	207	22.90
2	2	2		2	2	3	3	2		3	3	3	3			10,900	77	16	2	180,000	2	0.60	0.30	28	27	42	12.80
2	2	2		1	3	3	3	3		3	3	3	3	2		9,100	80	10	1	263,000	3	0.80	0.30	34	16	74	
2	2	2		2	3	3	3	3		3	3	3	3	3		8,400	71	26	2	113,000	2	1.20	0.30	62	29	64	13.00
2	2	2		2	3	3	3	2		3	3	3	3			15,500	88	8	1	94,000	3	0.80	0.30	58	54	126	
2	2	2		2	3	3	3	2		3	3	3	3			20,100	84	4	1	295,000	3	1.55	1.30	133	109	197	16.70
2	2	2		2	3	3	3	2		3	3	3	3			14,400	91	1	1	130,000	3	2.70	2.20	320	206	50	
2	2	2		2	3	3	3	2		3	3	3	3			12,700	88	7	1	211,000	3	0.80	0.20	41	16	67	12.60
2	2	2		2	3	3	3	2		3	3	3	3			14,300	84	7	1	514,000	2	1.10	0.30	15	12	288	
2	2	2		2	3	3	3	2		3	3	3	3			17,400	72	18	2	72,000	3	0.80	0.40	66	22	34	
2	2	2		2	3	3	3	2		3	3	3	3			20,800	87	6	1	346,000	3	0.80	0.30	9,898	3,660	97	14.50
2	2	2		2	3	3	3	2		3	3	3	3			12,200	74	17	2		3						
2	2	2		2	2	2	2	2		3	3	3	3			11,700	83	9	1	125,000	2	2.80	0.80	69	24	26	12.20
2	2	2		2	3	3	3	2		3	3	3	3	3		13,100	80	8	2	203,000	2	0.70	0.40	32	13	126	
2	2	2		2	3	3	3	2		3	3	3	3			14,700	76	19	2	299,000	2	1.30	0.60	101	65	61	16.40
2	2	2		2	3	3	3	2		3	3	3	3			33,200	82	13	1	260,000	2	0.60	0.20	364	58	63	
2	2	2		2	3	3	3	2		3	3	3	3			15,300	58	36	2	272,000	2	0.50	0.30	61	20	93	13.30
2	2	2		2	3	3	3	2		3	3	3	3			32,100	84	5	1	143,000	2	0.90	0.70	158	63	77	13.70
2	2	2		2	3	3	3	2		3	3	3	3			11,800	87	6	1	102,000	3	1.50	0.20	112	54	29	
2	2	2		2	3	3	3	3		3	3	3	3			15,800	76	15	1	179,000	3	1.50	0.40	100	31	32	11.40
2	2	2		2	2	3	3	1 beta hem		3	3	3	3			25,000	80	15	1	94,000	2	2.00	1.80	78	71	369	11.70

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